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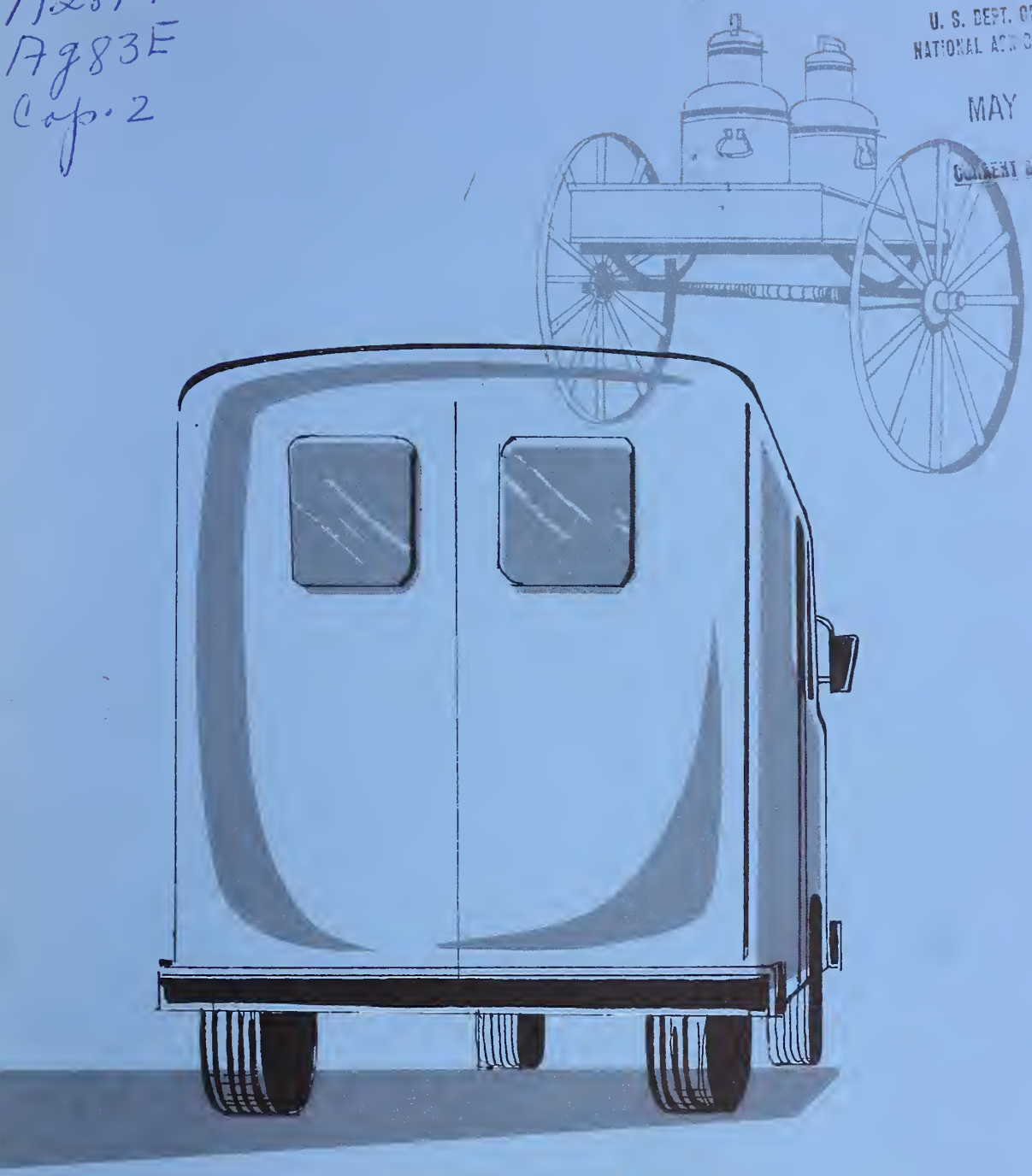

Milk Distributors' OPERATIONS..

ANALYSES of GROWTH, SALES DISTRIBUTION, COSTS and PROFITS

ECONOMIC RESEARCH SERVICE
MARKETING ECONOMICS DIVISION
U. S. DEPARTMENT OF AGRICULTURE

ERS-84

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Washington, D. C. November 1962

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PREFACE

This publication brings together, with minor editing, the special analyses that have appeared in the series, "Milk Distributors' Sales and Costs." These analyses have been issued quarterly since July-September 1956. Each report, beginning with the second issue, has included detailed analysis of some phase of the fluid milk processing and distributing industry. Demand for these analyses has been frequent and recurring. This collection of the reports is prepared to supply information on request and to eliminate the need of keeping the individual quarterlies in stock.

The fluid milk industry is dynamic. It has been and is undergoing rapid changes. These changes include, but are not restricted to: A rapid decrease in the number of plants processing and distributing milk; greatly extended areas of supply of raw milk and areas for marketing finished products; more unionizing of fluid milk industry workers; more supplying of raw milk by producer-members of cooperative organizations; more sales of milk through stores, in paper containers; increased use of larger containers; and decreased frequency of deliveries to homes.

Because of these and other changes, there continues to be a need for information on selling prices, costs, and other aspects of the fluid milk business. To provide current information, in 1951 the U. S. Department of Agriculture contracted with a firm that provides accounting and business consultant services to fluid milk distributors. The accounting firm supplies the Department with data from a representative group of 80 firms that process and distribute fluid milk. These processing and distributing firms use a uniform accounting system.

The 80 plants were selected to be representative by scale of operations, geographic location, size of sales market, and type of ownership. Very small plants, national chains, and producer-distributors are not included. The 80 plants, in total, did nearly 4 percent of the fluid milk business in the United States in 1961. The average volume handled per plant in 1961 was 26 1/2 million pounds of milk; the range in volume was from 2 million to 80 million pounds.

The contracting firm supplies these data quarterly. The data include quantities and costs of raw materials. For operating costs, they include type and function of operations. For sales, they include outlets, values, types and sizes of containers, and finished products. Type of work, time of workweek, wages, and costs are given for personnel. For delivery operations, type of deliveries per week, customers served, and number of trucks used are reported.

MILK DISTRIBUTORS' OPERATIONS--

Analyses of Growth, Sales Distribution, Costs, and Profits

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Marketing Economics Division
Economic Research Service

Beginning with the issue for July-September 1956, the U. S. Department of Agriculture has been issuing quarterly data on the costs of processing and distributing fluid milk. These data are supplied to the Department by an auditing firm under contract. The quarterly reports--Milk Distributors' Sales and Costs--each cover general information such as that shown in table 1 and figures 1 and 2. The October-December 1956 report and each subsequent report also include a special analysis of some phase of fluid milk processing and distributing.

These special analyses make up this publication. They are arranged by subject matter rather than in chronological order. Generally, the sequence is that of an operating or income statement: Sales, cost of goods sold, gross margin, operating costs, and net margin before income taxes. The series report number (MDSC-Milk Distributors' Sales and Costs) and the month of publication are included in the title line.

SECTION I--GROWTH

Growth of Milk Distributors (MDSC-7, Sept. 1958)

Growth has not been uniform among different-sized establishments or individual establishments (table 2). Medium-sized establishments, for example, grew more than twice as rapidly as large establishments.

Among individual establishments the variations in growth were very large, ranging from 1 that decreased in volume by 22 percent and in sales by 16 percent to 1 that increased in volume by 124 percent and in sales by 165 percent. As among size groups, large establishments had the smallest range--from 1 with practically no growth to 1 that increased more than 75 percent. Medium-sized establishments ranged from 1 with practically no growth to 3 that more than doubled. For small establishments, while 1 actually decreased by about 20 percent, 2 others more than doubled.

For all establishments as a group, and for the large and medium-sized ones, the percentage increase in volume of produce was more than the percentage increase in value of sales. This is consistent with other data (table 1) which show that sales value of product, per 100 pounds of milk and cream processed, was lower in 1957 than in 1952.

Table 1.--COSTS AND MARGINS FOR SELECTED DAIRY FIRMS: Per 100 pounds of milk and cream processed, for years 1952-61, and for the 5 most recent quarters

Account	Yearly average										1960	1961			
	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.
Net sales receipts 1/	11.32	11.12	10.69	10.95	11.22	11.15	11.05	11.16	11.25	11.37	11.41	11.35	11.35	11.37	11.39
Cost of materials for processing and resale:															
Raw milk and cream	5.85	5.43	5.07	5.12	5.39	5.23	5.13	5.10	5.11	5.02	5.34	5.13	4.85	4.90	5.18
Other	.82	.86	.83	.89	.76	.77	.70	.80	.87	.95	.91	.82	1.01	1.06	.90
Total	6.67	6.29	5.90	6.01	6.15	6.00	5.83	5.90	5.98	5.97	6.25	5.95	5.86	5.96	6.08
Gross margins	4.65	4.83	4.79	4.94	5.03	5.15	5.22	5.26	5.27	5.40	5.16	5.40	5.49	5.41	5.31
Operating costs:															
Salaries, wages, and commissions 2/	2.15	2.19	2.21	2.28	2.43	2.50	2.56	2.61	2.62	2.67	2.58	2.67	2.68	2.71	2.62
Containers	.60	.62	.65	.70	.72	.71	.70	.69	.66	.67	.65	.66	.68	.66	.69
Operating supplies	.30	.32	.35	.32	.28	.29	.29	.29	.30	.30	.30	.30	.29	.31	.30
Repairs, rent, and depreciation	.50	.52	.57	.60	.64	.67	.68	.67	.66	.68	.65	.67	.69	.69	.68
Taxes	.06	.06	.06	.06	.05	.06	.06	.06	.06	.06	.06	.06	.06	.07	.06
Insurance	.02	.02	.03	.04	.04	.04	.04	.04	.05	.05	.05	.05	.06	.05	.05
Services	.16	.19	.19	.18	.17	.17	.17	.17	.18	.19	.18	.16	.19	.21	.18
Advertising	.15	.15	.16	.18	.19	.18	.18	.18	.18	.19	.20	.18	.19	.19	.21
General	.15	.13	.13	.14	.16	.15	.16	.16	.15	.16	.18	.15	.17	.16	.17
Total	4.09	4.20	4.35	4.50	4.68	4.77	4.84	4.87	4.86	4.97	4.85	4.90	5.01	5.05	4.96
Net margins 3/	.56	.63	.44	.44	.35	.38	.38	.39	.41	.43	.31	.50	.48	.36	.35
Firms reporting	43	51	75	83	80	80	80	80	80	80	80	80	80	80	80

1/ Gross sales receipts less discounts, allowances, and returns.
2/ Includes State unemployment, Federal old age, workmens' compensation, and employee benefits.
3/ Net returns to owners before income taxes.

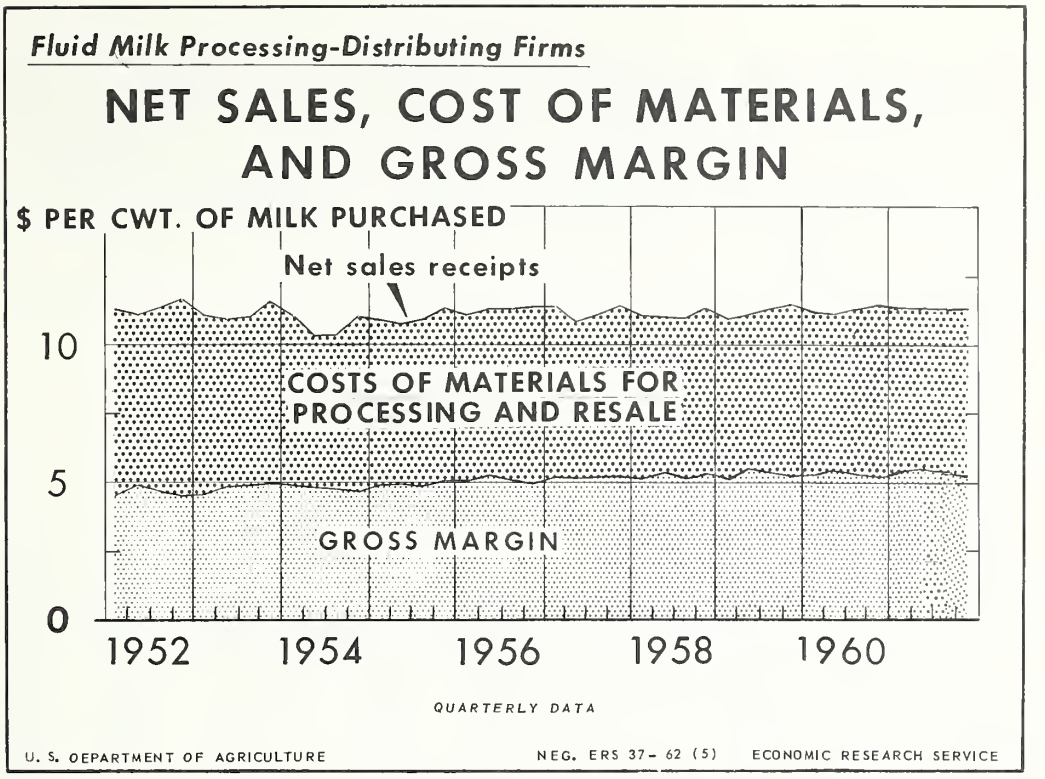

Figure 1

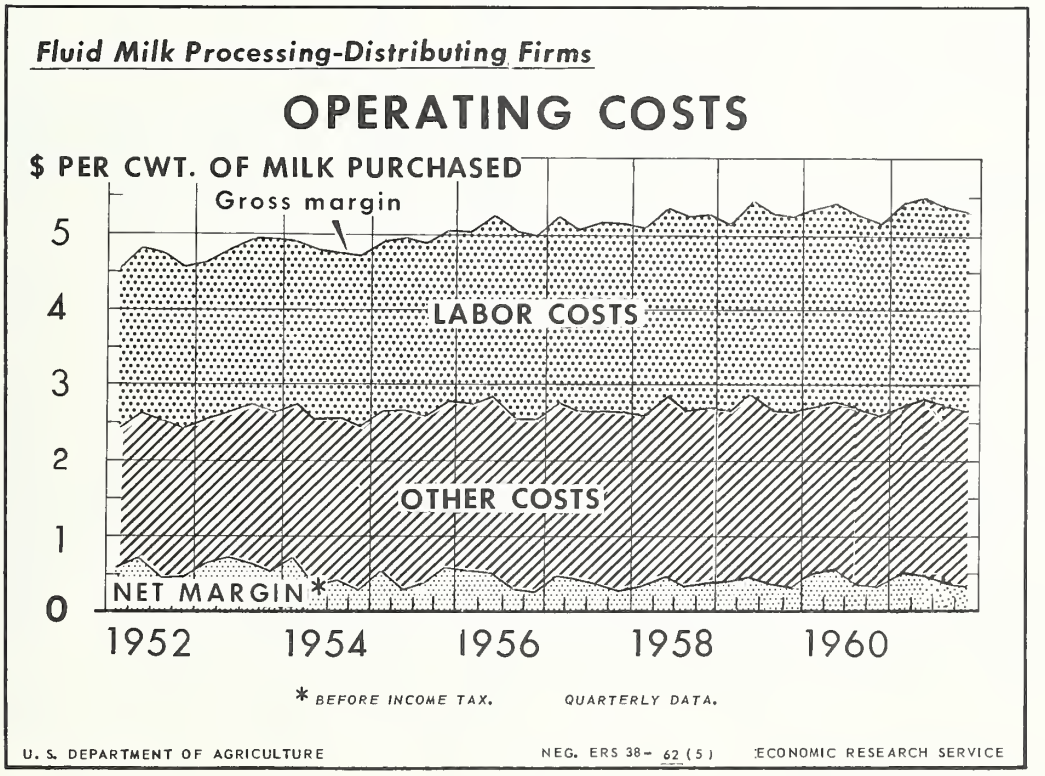

Figure 2

Table 2.--Rate of growth for milk distributors: By size of establishment

Size of establishment 1/	Average annual growth		Average growth of volume and sales, 1952-57
	Volume	Sales	
	Percent	Percent	Percent
Large	4.6	4.1	25
Medium	9.6	8.4	50+
Small	6.3	7.0	36
All	6.3	5.9	36

1/ Large establishments are defined as those processing 24 million pounds of milk or more in 1955; medium, from 12 to 23.9 pounds; and small, less than 12.

Table 3.--Fluid milk distributors: Indices of growth of firms as measured by volume of product handled and value of sales.

(Annual indices based on year 1952 = 100; quarterly indices based on average quarter 1952 = 100)

Period	All firms		Large firms		Medium firms		Small firms	
	Volume of product	Value of sales	Volume of product	Value of sales	Volume of product	Value of sales	Volume of product	Value of sales
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
1952	100	100	100	100	100	100	100	100
Jan.-Mar.	97	99	98	99	98	97	95	101
Apr. June	101	98	102	99	98	96	99	97
July-Sept.	100	98	99	97	100	99	103	101
Oct.-Dec.	102	105	101	105	104	107	103	101
1953	109	105	108	100	112	111	110	109
Jan.-Mar.	104	102	103	97	106	105	108	112
Apr.-June	114	103	117	99	110	108	114	110
July-Sept.	109	102	105	95	116	112	111	111
Oct.-Dec.	109	110	106	107	117	121	105	104
1954	114	106	112	100	123	117	106	105
Jan.-Mar.	112	105	108	100	119	113	105	108
Apr.-June	115	100	116	96	116	107	105	100
July-Sept.	113	103	108	95	127	116	109	106
Oct.-Dec.	118	115	115	109	129	131	104	103
1955	122	115	118	108	133	128	113	114
Jan.-Mar.	120	111	117	104	131	124	108	110
Apr.-June	120	110	120	105	126	120	111	111
July-Sept.	120	113	114	105	134	125	115	117
Oct.-Dec.	126	125	121	118	140	144	116	117
1956	131	125	123	116	150	140	129	130
Jan.-Mar.	129	123	123	114	143	137	122	130
Apr.-June	137	123	127	115	153	135	142	131
July-Sept.	125	120	115	110	146	137	121	126
Oct.-Dec.	135	133	124	124	159	152	132	134
1957	136	133	125	122	158	150	136	140
Jan.-Mar.	134	133	126	122	151	150	132	143
Apr.-June	137	130	124	119	157	144	150	142
July-Sept.	132	129	122	117	157	147	129	137
Oct.-Dec.	139	139	127	130	166	159	134	138
1958, Jan.-Mar.	142	139	134	128	157	155	137	148
Range in growth, individual firms, quarter 1952 to Jan.-Mar. 1958								
Least	78	86	108	106	104	102	78	86
Most	224	265	189	177	224	265	218	208

Seasonal Variations

Volume of product handled and value of sales of milk distributors both show definite seasonal patterns (fig. 3). Volume of product is largest in the second quarter, while value of sales is largest in the fourth quarter. Both volume and sales are smallest during the summer--the third quarter (table 4). Variation in volume of product between the largest and smallest quarter averages about 5 percent, while the comparable variation in value of sales is about 7 1/2 percent.

Table 4.--Milk distributors: Indices of seasonal variations in volume of product and value of sales

Item	Size of establishment			
	All	Large	Medium	Small
Volume of product				
1st quarter	100.2	100.5	99.4	99.1
2nd quarter	102.0	103.7	98.9	103.4
3rd quarter	97.9	96.2	100.0	99.4
4th quarter	99.8	99.6	101.7	98.1
Value of sales				
1st quarter	100.7	100.3	100.2	102.8
2nd quarter	98.1	98.8	96.0	99.7
3rd quarter	96.8	95.3	97.5	99.9
4th quarter	104.4	105.6	106.3	97.6

The greatest percentage variations occur in the large establishments, both in product volume and sales value. Medium-sized establishments have the least variation of product volume, and small establishments have the least variation in sales value. Factors contributing to the variations may include: Products handled; relatively high or low percentages of fluid milk to total business; changes in costs of raw milk and selling prices of finished product not proportionate to changes in volume. For example in 1952, 1954, and 1957, the increase in volume in the second quarter was more than offset by decreases in price, and milk distributors received fewer dollars for larger volume of product.

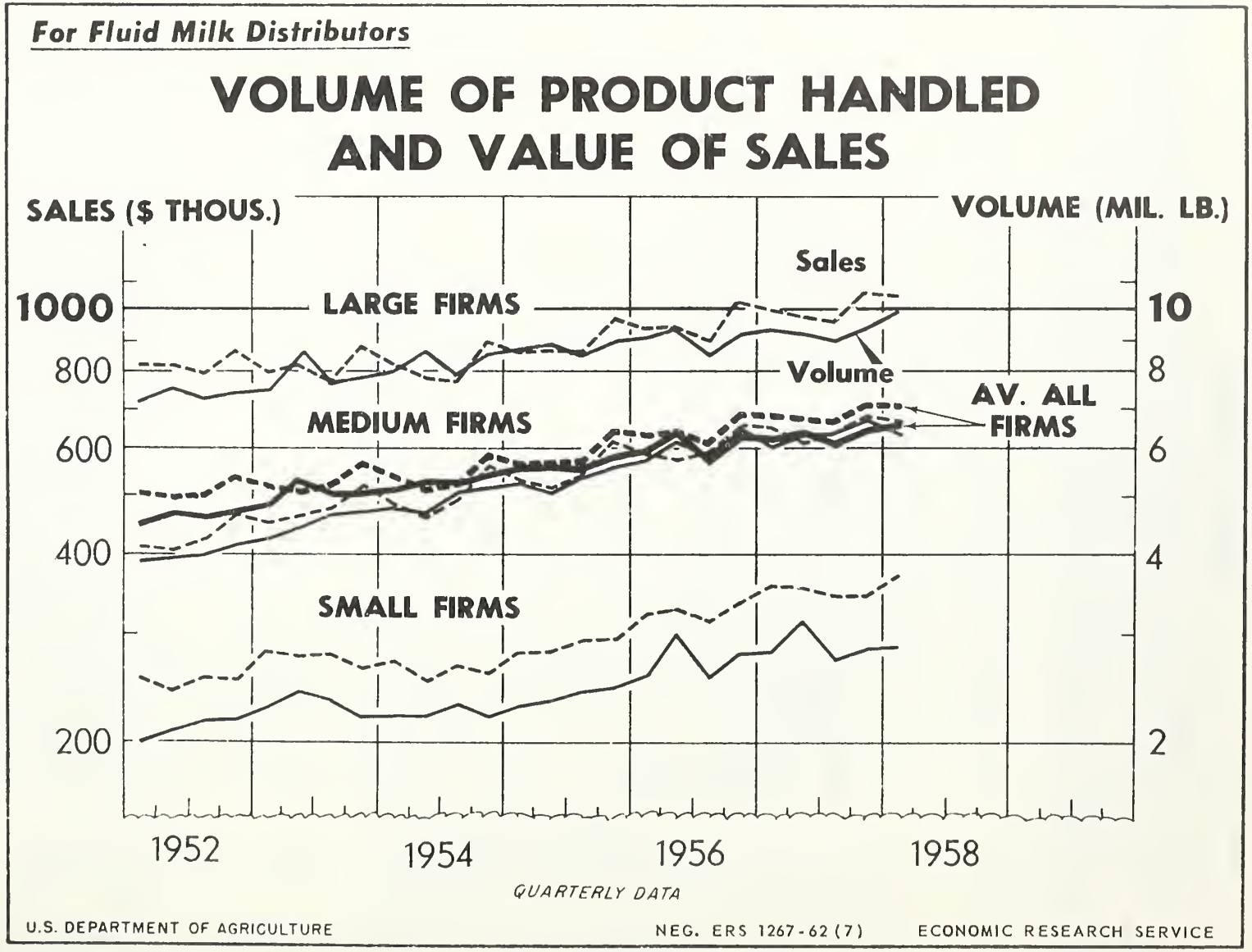
For Fluid Milk Distributors
VOLUME OF PRODUCT HANDLED AND VALUE OF SALES
SALES ($ THOUS.)
VOLUME (MIL. LB.)
1000
800
600
400
200
10
8
6
4
2
Sales
Volume
LARGE FIRMS
MEDIUM FIRMS
SMALL FIRMS
AV. ALL FIRMS
1952
1954
1956
1958
QUARTERLY DATA
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 1267-62 (7)
ECONOMIC RESEARCH SERVICE

Figure 3

SECTION II--SALES

Selling Prices (MDSC-12, Dec. 1959)

Average selling prices for milk, packaged in types and sizes of containers used in households, declined over the 4-year period of April-June 1956 to April-June 1959 (table 5). 1/ Listed selling prices for a selected group of fluid milk distributors indicate that this decline occurred in spite of the fact that prices for milk in individual types and sizes of containers increased. The paradox of average prices declining while individual prices increase can be accounted for by two changes: First, and most important, a shift to larger containers at lower per-quart prices; second, a shift away from higher priced varieties of milk (table 6).

For retail sales--home delivery and dairy-owned stores--the weighted average of listed selling prices, per-quart equivalent, was 24.4 cents in April-June 1959, the same as in 1956 but higher than in 1957 and 1958. During this 4-year period, the price of single quarts of homogenized milk increased 1.0 cent to 25.3 cents, but sales in single-quart containers decreased from over 58 percent to 44 percent of the total retail sales. During this period, the price per quart of homogenized milk in half-gallon containers decreased 0.1 cent to 23.3 cents, but sales in half-gallon containers increased from 12 percent to 38 percent of the total retail sales. Sales in gallon jugs, at lowest prices per quart, increased from 2.3 percent to 5.6 percent of the total. Also, the price of premium milk--high butterfat milk and "breed" milk 2/ --increased from 26.1 cents to 27.0 cents per quart, but sales decreased from over 14 percent to about 4 percent of the total. The effects of these shifts toward containers of larger size but lower price per quart, and away from premium-priced kinds of milk can be pointed out in another way: In 1956 the weighted average price of all milk was 0.1 cent higher than the price of homogenized milk in single quarts; in 1959 it was 0.9 cent lower.

During this period, the same factors affected wholesale prices. The weighted average of the listed prices, per-quart equivalent, decreased from 21.4 cents to 21.1 cents, while the price for all but one size of container and type of milk increased. The wholesale price of single quarts of homogenized milk increased 0.7 cent to 22.5 cents, but sales in this container decreased from 55 percent to less than 26 percent of total wholesale sales of milk. The price per quart of milk in half-gallons increased

1/ Household-used types and sizes of containers for milk are: glass gallons, glass and paper half-gallons, and glass and paper quarts. Other sizes, such as 3-gallon and 5-gallon dispenser cans, pints, 1/3 quarts, and half-pints, are used almost entirely for institutional sales outlets.

2/ "Breed" milk is a term used for milk produced by certain breeds of cattle, most commonly Jersey or Guernsey.

0.4 cent to 20.7 cents, and sales increased from 30 percent to 64 percent of the total; sales in gallon jugs--the lowest per-quart-priced milk--increased from 3 percent to nearly 8 percent of the total. Wholesale sales of premium milk and creamline milk--the highest priced milk--dropped from about 12 percent to less than 3 percent of the total. In 1956 the weighted average wholesale price was 0.4 cent lower than the single quart price and in 1959 it was 1.4 cents lower.

The general trend in both retail and wholesale selling prices is partially substantiated by the net sales receipts from milk processed by fluid milk distributors. In the April-June quarters, net sales receipts per 100 pounds were $11.25 in 1956, $10.85 in 1957, $10.96 in 1958, and $11.10 in 1959. The shift from home delivery to wholesale also influenced this trend.

Actual selling prices are probably a little lower than the weighted average of the listed prices for three reasons: First, data from another source show retail discount plans in use in about 30 percent of the fluid milk markets. 3/ Second, wholesale discounts, ranging up to 15 percent, are in effect in many markets. Third, a factor which may be irregularly important in individual markets, selling prices may be below list prices for sales promotions, week-end specials, and price wars.

Selling Prices (MDSC-20, March 1962)

Listed selling prices for a selected group of fluid milk firms indicate that both average retail and average wholesale prices of milk increased in 1960 but not in 1961. The data cover milk packaged in types and sizes of containers used in households and do not indicate the effects of quantity discounts (table 5).

Between 1956 and 1959, weighted average prices remained stable or declined slightly, despite the fact that prices for milk in individual types and sizes of containers generally increased. However, the increases were offset by a shift away from higher priced varieties of milk to lower priced milk in larger containers (table 6).

These shifts, quite rapid during 1956-59, have been slow during the past 2 years. Consequently, the increases in prices in the individual type and size of container have resulted in increased average prices. The differences between the two periods can be shown by illustration:

For retail sales, the price of quarts of homogenized milk increased from 24.3 cents in 1956 to 25.3 cents in 1959 but the quantity accounted for 15 percent less of the total. At the same time, the price of half-gallons decreased from 23.4 cents per quart to 23.3 cents but the quantity accounted for 25 percent more of the total. During 1960 and 1961, quart prices increased to 26.4 cents but the volume changed little. Half-gallon prices increased to 25.0 cents per quart with but little change in volume.

Briefly, the shift to larger containers and away from premium-priced milk has continued but at a much slower rate during the past 2 years. The shift has not been large enough to offset increases in unit prices.

3/ U. S. Agricultural Marketing Service. Fluid Milk and Cream Report. Issued monthly.

Table 5 .--LISTED SELLING PRICES PER QUART: Milk sold in types and sizes of containers used in households, April-June quarter, 1956-61 1/

April-June quarter	Homogenized milk			Premium milk	Creamline milk	Weighted average
	Gallons	Half-gallons	Quarts	Quarts	Quarts	
	Cents	Cents	Cents	Cents	Cents	Cents
Retail 2/						
Average:						
1956	20.9	23.4	24.3	26.1	24.2	24.4
1957	21.3	23.0	24.1	27.0	24.1	24.0
1958	20.8	22.9	24.4	27.5	24.3	23.8
1959	21.1	23.3	25.3	27.0	25.0	24.4
1960	22.2	24.8	26.3	27.2	26.3	25.4
1961	22.4	25.0	26.4	28.1	27.0	25.6
Range:						
1956	18.0-24.5	20.0-27.5	17.5-28.0	19.5-29.0	17.5-29.0	
1957	18.5-24.5	19.5-27.5	20.0-29.0	21.0-30.0	20.0-31.0	
1958	18.0-24.5	18.5-27.5	19.0-29.0	22.0-30.0	19.0-27.0	
1959	17.0-25.0	18.5-28.0	21.0-28.5	23.0-30.5	20.0-27.0	
1960	19.5-25.8	20.0-29.5	21.0-29.5	23.0-30.5	21.0-32.5	
1961	19.5-26.2	20.5-28.5	21.0-29.0	25.0-31.0	21.0-29.5	
Wholesale						
Average:						
1956	17.7	20.3	21.8	23.9	22.9	21.4
1957	18.3	21.0	22.1	23.7	22.5	21.5
1958	18.4	20.7	22.6	24.7	22.6	21.3
1959	18.7	20.7	22.5	25.6	22.7	21.1
1960	21.0	21.9	23.5	25.6	23.6	22.2
1961	20.6	22.0	23.6	26.2	23.8	22.2
Range:						
1956	15.5-22.0	18.0-25.5	17.0-26.0	19.0-17.0	17.0-25.0	
1957	15.5-23.0	16.5-25.5	17.0-26.0	20.0-28.0	17.5-27.0	
1958	15.5-21.5	16.0-26.0	17.0-26.5	19.5-28.0	17.0-25.5	
1959	15.5-21.5	16.0-25.5	17.5-27.5	20.5-27.0	17.0-26.5	
1960	16.8-24.0	16.5-26.5	18.0-27.5	20.0-28.0	19.0-27.5	
1961	17.5-24.8	17.5-26.5	18.0-27.0	21.0-27.0	18.0-27.0	

1/ Milk only; does not include skim milk, chocolate milk, buttermilk, cream and milk mixture, or cream. Container sizes not included (bulk dispenser cans, pints, 1/3 quarts, and 1/2 pints) are used for institutional sales outlets.

2/ Home delivery and dairy-owned stores.

Table 6 .--Percentage of milk distributors' sales by specified types of milk and sizes of containers used in households, retail and wholesale, April-June quarter, 1956-61 1/

Kind of milk and size of container	Retail 2/						Wholesale					
	1956	1957	1958	1959	1960	1961	1956	1957	1958	1959	1960	1961
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Homogenized milk, all containers	72.7	78.9	84.1	87.2	89.6	89.9	88.2	95.4	96.3	97.4	98.1	99.1
Gallons, glass	2.3	2.4	4.5	5.6	8.1	8.5	3.0	3.6	5.2	7.6	9.2	11.2
Half-gallons	12.1	23.0	35.7	37.6	38.2	39.4	30.2	47.7	56.6	64.2	66.9	68.9
Glass	10.0	18.5	20.4	21.6	25.2	27.1	2.0	1.7	1.4	2.4	4.4	4.0
Paper	2.1	4.5	15.3	16.0	13.0	12.3	28.2	46.0	55.2	61.8	62.5	64.9
Quarts	58.3	53.5	43.9	44.0	43.3	42.0	55.0	44.1	34.5	25.6	22.0	19.0
Glass	47.6	45.4	37.3	38.6	38.6	38.2	10.3	6.5	3.5	2.5	2.0	1.4
Paper	10.7	8.1	6.6	5.2	4.7	3.8	44.7	37.6	31.0	23.1	20.0	17.6
Premium milk, quarts	14.4	8.2	4.8	4.1	3.1	3.2	4.7	1.0	.8	.7	.4	.4
Glass	13.6	7.3	4.1	3.6	2.5	3.0	2.5	.2	.2	.1	.1	.1
Paper	.8	.9	.7	.5	.6	.2	2.2	.8	.6	.6	.3	.3
Creamline milk, quarts	12.9	12.9	11.1	8.7	7.3	6.9	7.1	3.6	2.9	1.9	1.5	.5
Glass	11.5	11.8	10.2	8.5	7.3	6.7	3.2	1.5	.9	.4	.9	.3
Paper	1.4	1.1	.9	.2	.0	.2	3.9	2.1	2.0	1.5	.6	.2
All milk	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total glass	85.0	85.4	76.5	78.1	81.7	83.5	21.0	13.5	11.2	13.0	16.6	17.0
Total paper	15.0	14.6	23.5	21.9	18.3	16.5	79.0	86.5	88.8	87.0	83.4	83.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Milk only; does not include skim milk, chocolate milk, buttermilk, cream and milk mixtures, or cream. Container sizes not included (bulk, dispenser cans, pints, 1/3 quarts and 1/2 pints) are used for institutional sales outlets.
2/ Home delivery and dairy-owned stores.

The changes in prices and container sizes for wholesale sales were about the same as for retail. Unit prices generally increased throughout the 1956-61 period; the shifts in container sizes were rapid during 1956-59 but slow in 1960 and 1961. Consequently, weighted average wholesale prices also increased.

It is probable that the prices paid by consumers are less than indicated by the above weighted average list prices. Quantity discount plans are in effect in many markets for retail sales and in most markets for wholesale sales.

The shift from glass containers to paper containers appears to have stopped or reversed from 1960-61. The proportion of milk in gallon jugs increased for both retail and wholesale sales; glass half-gallons became increasingly important for retail. Considering these factors and others, it appears that a little more than half of the milk currently consumed in households is from glass containers.

Analysis of Changes in Net Payment Received 4/ (MDSC-13, March 1960)

Net payment received per quart of milk was smaller in 1959 than in 1956. An analysis of the sales of 80 representative fluid milk distributors shows that weighted average net receipts were 22.2 cents per quart in the April-June quarter of 1959, 0.1 cent less than 4 years earlier (table 7).

Table 7.--Net payment received per quart of fluid milk: Sold by representative distributors, April-June quarter, 1956-59 1/

Year	Homogenized			Premium	Creamline	Weighted average
	Gallon jugs	Half-gallons	Quarts	Quarts	Quarts	
	Cents	Cents	Cents	Cents	Cents	Cents
1956	18.5	21.8	22.6	25.4	22.3	22.3
1957	19.0	20.2	22.1	25.9	22.9	21.4
1958	18.7	21.1	23.3	26.3	23.2	22.1
1959	19.2	21.2	24.1	26.7	23.8	22.2

1/ Sales--less discounts, allowances, and returns--at retail and wholesale combined. Data not available for separating into subcategories, such as home delivery, wholesale delivery, platform, etc.

Milk only; does not include skim milk, chocolate milk, buttermilk, or milk and cream mixtures, nor sizes of containers not commonly used in households, such as bulk containers, dispenser cans, pints, 1/3 quarts, and 1/2 pints.

Items included in this analysis were the types of milk (homogenized, creamline, and premium) sold in sizes of containers (gallons, half-gallons, and quarts) used in households. These items account for 70 percent of the total product pounds sold by milk distributors. With one exception, net receipts per quart increased for each type of milk and size of container. Net receipts increased 0.7 cent per quart for homogenized milk in gallon containers, 1.5 cents for homogenized milk and creamline milk in quarts, and 1.3 cents for premium milk in quarts. The exception was a

4/ Net payment received is receipts from sales less discounts, allowances, and returns.

decrease of 0.6 cent for homogenized milk in half-gallons. In spite of these increases, average net receipts per quart decreased because of shifts to multiple-quart containers of homogenized milk (fig. 4) and to wholesale outlets. During the 4-year period 1956-59, sales of homogenized milk in half-gallons increased from 26 percent to 43 percent of total sales, while combined sales of premium and creamline milk in quarts decreased from 9 percent to 4 percent. Retail sales were 42 percent of the total in 1956, but only 37 percent in 1959.

The principal change in the weighted average net receipts per quart during the 4-year period was in 1957, when there was a sharp drop in net receipts per quart for half-gallons and quarts of homogenized milk. Most of the decline was regained in 1958, and there was a slight increase in average net receipts in 1959.

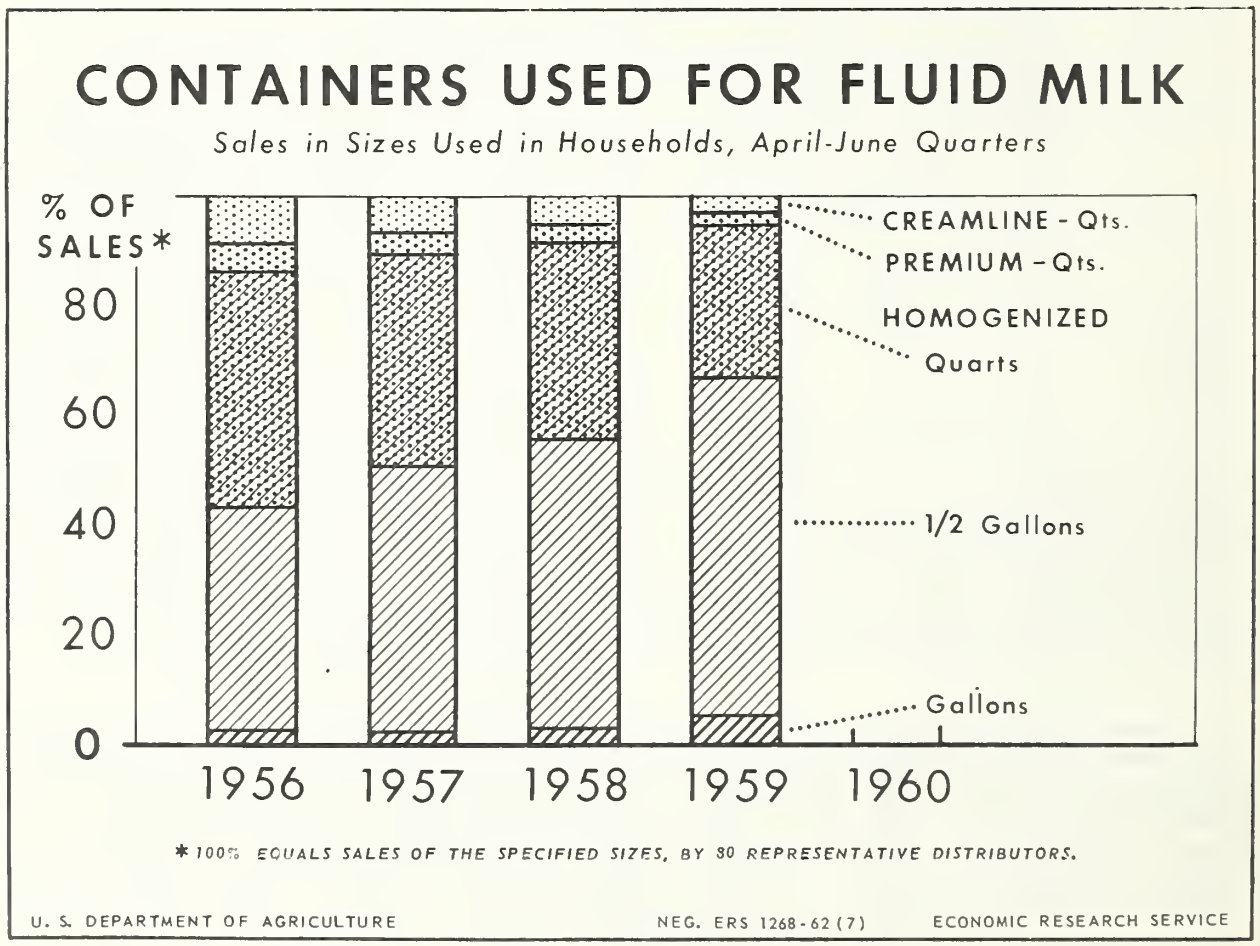

Figure 4

Sales of Homogenized Milk (MDSC-6, June 1958)

Homogenized milk alone accounted for nearly 70 percent of the total products sold by milk distributors. Also, almost two-fifths of the homogenized milk was sold in half-gallon paper cartons, as found in an analysis of sales of homogenized milk by 80 representative firms during the October-December quarter, 1957 (table 8). Sales in 1-quart glass bottles were second in importance, accounting for about one-fifth of the total. Other more important sizes were the 1-quart paper cartons and the half-gallon glass bottles, which were about 14 percent and 10 percent of the total, respectively. The half-pint paper carton constituted 6 percent of all sales, and was more important than all other fractional-quart sizes combined.

Table 8.--Sales of homogenized milk: Percent of total quantity of milk by type and size of container; quart equivalent selling price October-December 1957

Container size and type	Retail	Wholesale	Other	Total	Quart equivalent price
	Percent	Percent	Percent	Percent	Cents
Bulk (gallon)	---	0.8	0.1	0.9	19
Dispenser (5 gallon)	---	2.7	.6	3.3	20
Dispenser (3 gallon)	---	1/	1/	.1	22
Gallon, glass	1.0	.9	.6	2.5	19
1/2 gallon, glass	8.0	1.1	.7	9.8	21
1/2 gallon, paper	8.5	25.6	4.2	38.5	21
Quart, glass	18.6	1.2	1.0	20.8	24
Quart, paper	3.7	9.1	1.4	14.2	23
Pint, glass	1/	1/	1/	.1	24
Pint, paper	1/	.7	.1	.8	24
1/3 quart	1/	.2	.1	.3	24
1/2 pint, glass	1/	2.1	.7	2.8	25
1/2 pint, paper	1/	5.3	.7	6.0	26
Total	39.8	49.8	10.4	100.0	22

1/ Less than 0.05 percent.

Of all of the homogenized milk sold, 36 percent was in glass bottles of various sizes and 59 percent was in paper cartons. Forty percent of the homogenized milk was sold at retail to home-delivery customers and to dairy-owned store customers, 50 percent went to wholesale-delivery customers, and the remaining 10 percent was sold at the dairy-plant platform to subdealers, peddlers, and others.

Half-pint paper cartons were most important in terms of number of containers handled, representing nearly one-fourth of the total (table 9). Half-gallon paper cartons and 1-quart glass bottles were each about one-fifth. Of the total container units of homogenized milk sold, nearly 39 percent were glass bottles and 60 percent were paper cartons. About 32 percent of the containers were used for delivery to homes or in dairy-owned stores, 57 percent were used for wholesale-delivery trade, and the remaining 11 percent for platform customers.

Table 9.--Sales of homogenized milk: Percent of total containers handled, by type and size of container, October-December 1957

Container size and type	Retail	Wholesale	Other	Total
	Percent	Percent	Percent	Percent
Bulk (gallon)	---	0.2	1/	0.2
Dispenser (5 gallon)	---	.7	.2	.9
Dispenser (3 gallon)	---	1/	---	1/
Gallon, glass	0.3	.2	.1	.6
1/2 gallon, glass	4.1	.6	.3	5.0
1/2 gallon, paper	4.3	13.0	2.2	19.5
Quart, glass	18.8	1.3	1.0	21.1
Quart, paper	3.7	9.2	1.4	14.3
Pint, glass	.1	.1	1/	.2
Pint, paper	1/	1.4	.2	1.6
1/3 quart	.1	.5	.2	.8
1/2 pint, glass	.1	8.4	2.9	11.4
1/2 pint, paper	.1	21.6	2.7	24.4
Total	31.6	57.2	11.2	100.0

1/ Less than 0.05 percent.

The equivalent price of 1 quart is a commonly used measure for comparing prices of milk sold in different sizes and types of containers. Milk distributors received an average price of 22 cents per quart equivalent of homogenized milk (table 8). The quart-equivalent prices ranged from 19 cents in bulk and in 1-gallon glass bottles to 26 cents in half-pint paper cartons. Data were not available for determining selling prices to different sales outlets. However, since some types and sizes of containers were used almost exclusively for particular sales outlets, some conclusions may be made on quart-equivalent prices. The bulk price of 19 cents, the 5-gallon price of 20 cents, and the fractional-quart unit prices of 24 cents for 1-pint glass and 1-pint paper, 25 cents for half-pint glass, and 26 cents for half-pint paper were all wholesale prices. Since 90 percent of the 1-quart glass bottles went to home-delivery customers, the price of 24 cents was very near the retail price. For the same reason the quart-equivalent price of 21 cents for sales in glass half-gallons was very near the retail price.

The relative importance of the different products handled by milk distributors and the relative importance of different sales outlets have shifted continuously during the 1957-60 period (fig. 5). Generally, there has been a shift to homogenized whole milk, skim milk, and low-fat milk and away from creamline and special milk.

During this same period (1957-60), wholesale sales increased slightly in relative importance and retail sales declined.

Products Handled

Sales of homogenized milk accounted for 73.8 percent of total pounds of products sold in the January-March quarter of 1960 (table 10) as compared to 68.3 percent in April-June 1957. During this period, sales of skim milk, low-fat milk, and half-and-half increased by a third in relative importance. Sales of creamline and special milk decreased by about two-fifths. Buttermilk and chocolate milk did not change in importance.

Among the manufactured dairy products, cottage cheese remained about the same in importance but ice cream and other products declined. Part of the decline in ice cream was due to seasonal factors: Frozen products are less important in the January-March quarters than in the April-June quarters. These are the only two quarters for which this analysis is available.

Nondairy products remained unchanged during the period.

Sales Outlets

Retail sales accounted for 36.8 percent of total sales in January-March 1960, a drop of 1.5 percentage points from April-June 1957; wholesale sales rose 2.1 percentage points to 51.3 percent, and other sales dropped 0.6 percentage point to 11.9 percent. These changes are so small that they cannot be considered as significant (fig. 6).

For example, the change in percentage of volume sold at retail (home delivery) and at wholesale does not necessarily indicate that householders are shifting to stores for their milk supply. The slight change may have resulted from increased wholesale sales to eating places, schools, and institutional outlets rather than to stores for resale.

Among products, the most important changes were the increased sales of homogenized milk to both retail and wholesale outlets and the decreased sale of creamline milk to retail outlets.

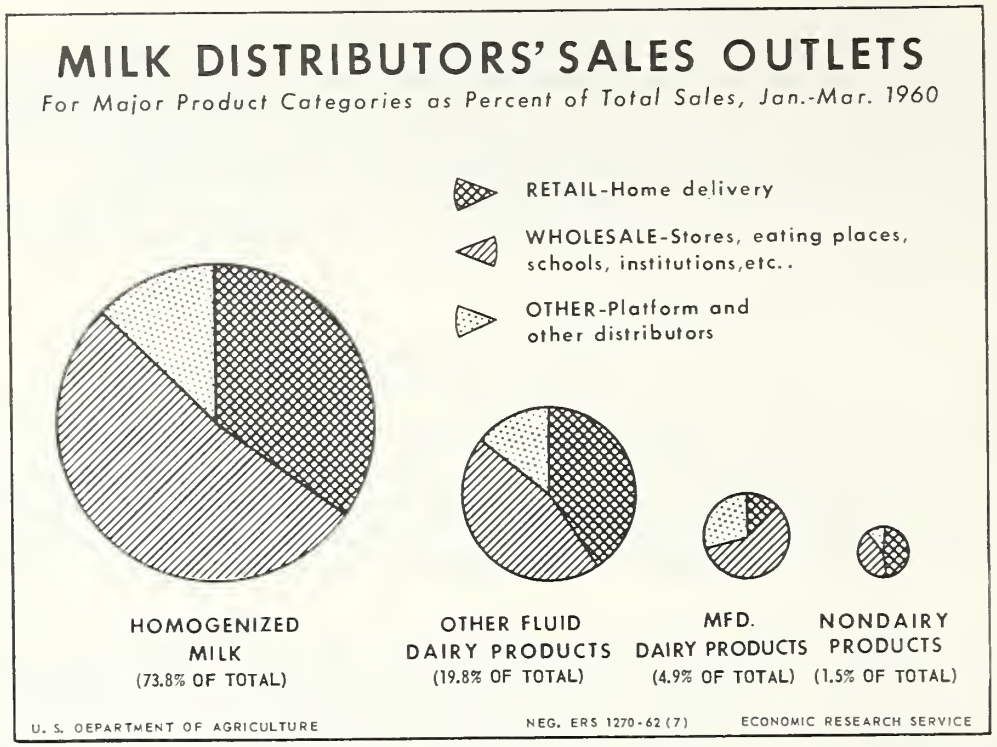
MILK DISTRIBUTORS' SALES OUTLETS
For Major Product Categories as Percent of Total Sales, Jan.-Mar. 1960
RETAIL-Home delivery
WHOLESALE-Stores, eating places, schools, institutions,etc..
OTHER-Platform and other distributors
HOMOGENIZED MILK (73.8% OF TOTAL)
OTHER FLUID DAIRY PRODUCTS (19.8% OF TOTAL)
MFD. DAIRY PRODUCTS (4.9% OF TOTAL)
NONDAIRY PRODUCTS (1.5% OF TOTAL)
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 1270-62 (7)
ECONOMIC RESEARCH SERVICE

Figure 5

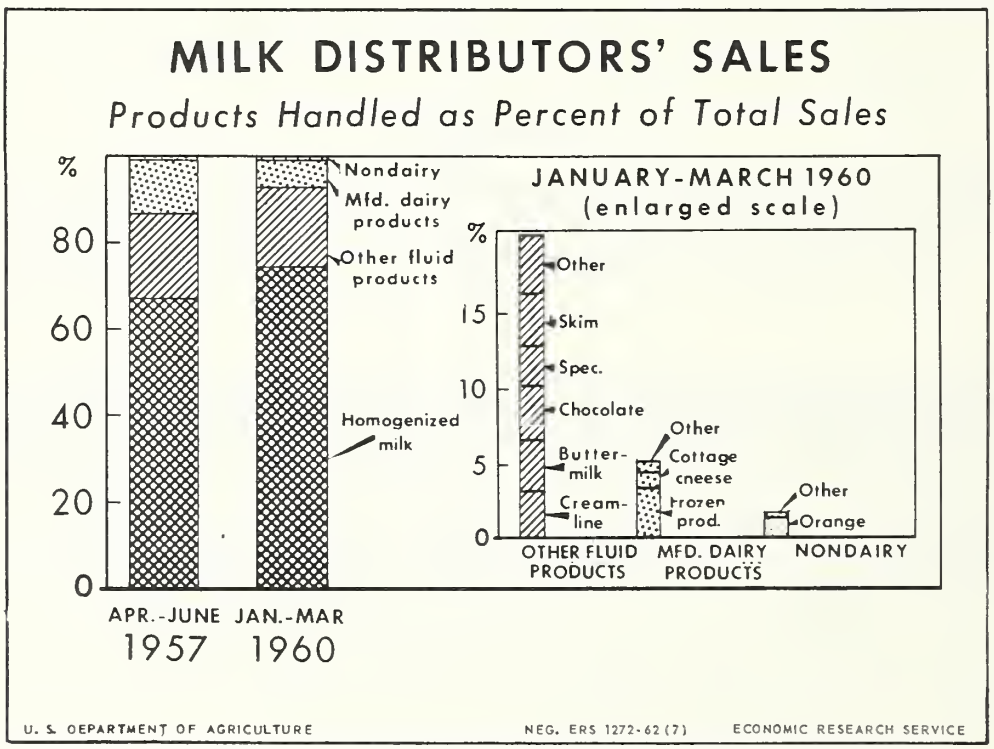

Figure 6

Table 10.--Products handled and sales outlets: Milk distributors' sales--pounds of product as percentage of total pounds, all products, January-March 1960

Product	Retail sales	Wholesale sales	Other sales 1/	Total all sales
	Pct.	Pct.	Pct.	Pct.
Fluid dairy products				
Homogenized	27.4	38.9	7.5	73.8
Creamline	2.1	.6	.2	2.9
Buttermilk	.8	2.2	.4	3.4
Chocolate	.6	2.6	.6	3.8
Special	2.0	.3	.1	2.4
Skim	1.9	1.1	.3	3.3
Other milk and cream 2/	.7	2.1	1.2	4.0
Total fluid dairy products	35.5	47.8	10.3	93.6
Manufactured dairy products				
Ice cream and ice cream products	0.3	1.9	0.9	3.1
Cottage cheese	.1	.6	.4	1.1
Other 3/	.2	.4	.1	.7
Total manufactured dairy products	0.6	2.9	1.4	4.9
Nondairy products				
Orange juice and drinks	0.5	0.6	0.1	1.2
Eggs	.2	4/	---	.2
Other 5/	4/	4/	.1	.1
Total nondairy products	0.7	0.6	0.2	1.5
Total all products	36.8	51.3	11.9	100.0

1/ Platform sales and sales to other distributors.
2/ Cereal, coffee, whipping, and sour cream; half-and-half; eggnog, and low-fat milks.
3/ American and other types of cheese, dry milk, yogurt, butter, aerated cream, margarine, and other miscellaneous items.
4/ Less than 0.05 percent.
5/ Other nonmilk bottled drinks.

Wholesale Sales -- Outlets, Product, and Containers (MDSC-19, Sept. 1961)

Over two-thirds of the total product sold on wholesale milk routes of six selected fluid milk distributors went to stores; other outlets in order of importance were eating places, institutions, and schools.

Homogenized milk was by far the most important product, accounting for over three-fourths of the total. The other major products, in order of importance, were special milk, cream and cream-milk mixtures, and buttermilk. Fifty percent of

the containers used for homogenized milk were half-pints -- but only 12 percent of the homogenized milk went into this size container.

These are some of the findings from a special survey made of the wholesale operations of six fluid milk distributing plants. Two of the plants are in the Mid-Atlantic area, two in the East North Central area, one in the Mid-South, and one in the Southeast. Data were obtained from five plants for January or February operations, and from one plant for July operations.

The survey provided information regarding kind of sales outlets for dairy products, products consumed, and types of containers going to the outlets.

Wholesale Outlets

Wholesale outlets were classified in four groups: (1) Stores -- places of business whose primary function is sales of consumer products for off-site consumption; (2) schools -- both public and private schools for children; (3) eating places -- places of business whose primary function is sales of prepared food for on-site consumption; (4) institutions -- places where people are fed as an incident to being there for some other purpose, including, but not limited to, hospitals, jails and prisons, orphanages, rest homes, and military messes.

Stores were by far the most important outlet for wholesale operations of the plants surveyed, accounting for 70.6 percent of the total (fig. 7). Sales to eating places were 13.6 percent, to institutions 9.1 percent, and to schools 6.5 percent. The remaining 0.2 percent went to such places as rectories or workers at construction sites.

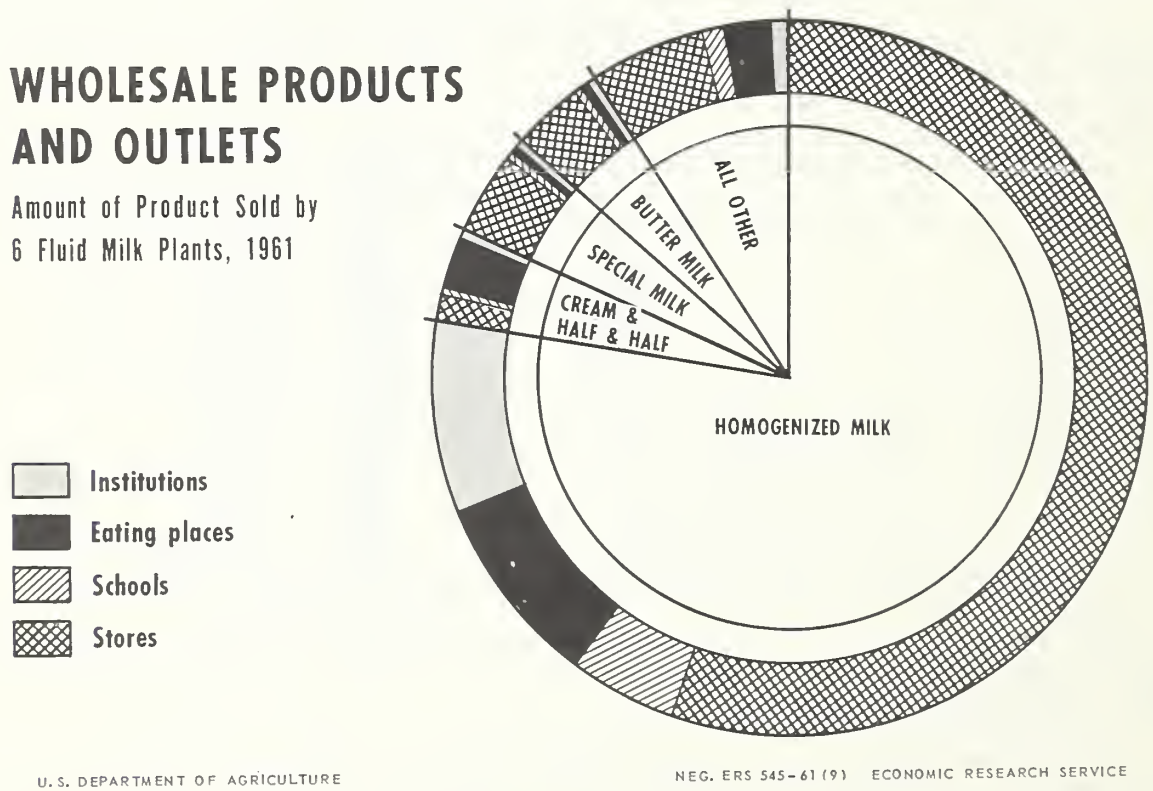

Figure 7

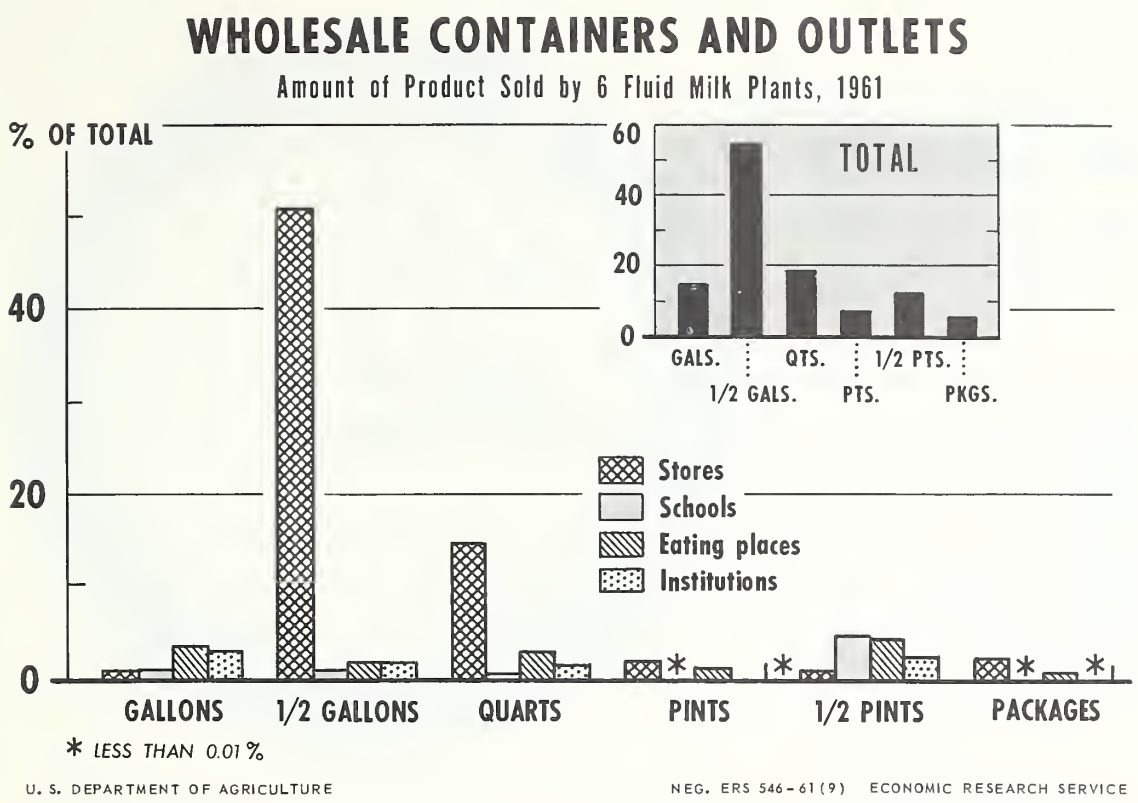

Figure 8

All six of the plants had both specialized and mixed wholesale routes. All plants had at least one route that specialized in "downtown" sales to restaurants, cafeterias, and hotels. Plants with military contracts had special routes for delivery to the commissary (stores) and mess (institutions); special routes were also used for sales to schools and retail grocery chain stores when the dairy had a major contract for these outlets. The special routes usually delivered to only the outlets which were concentrated in a particular area; outlying eating places, schools, and chain stores were supplied from mixed routes.

Products Sold at Wholesale

Homogenized milk accounted for 77.3 percent of the pounds of all products sold on the wholesale milk routes (fig. 8). No other single product was of major importance. Three products -- special milk, cream, and cream-milk mixtures (half-and-half), and buttermilk each represented between 4 and 5 percent; manufactured dairy products, chiefly cottage cheese, 2.7 percent; nondairy products, 1.8 percent. The least important product was creamline milk, only 0.3 percent of the total.

Stores were the major outlet for each of the products, except for cream and cream-milk mixtures. Nearly all of the sales to schools and institutions were homogenized milk. Homogenized milk represented over two-thirds of the sales to eating places; but this outlet took half of all sales of cream and cream-milk mixtures.

Homogenized Milk-Outlets and Containers

Sales in half-gallon containers to stores accounted for 57.9 percent of all sales of homogenized milk; sales in all container sizes to the store outlets represented

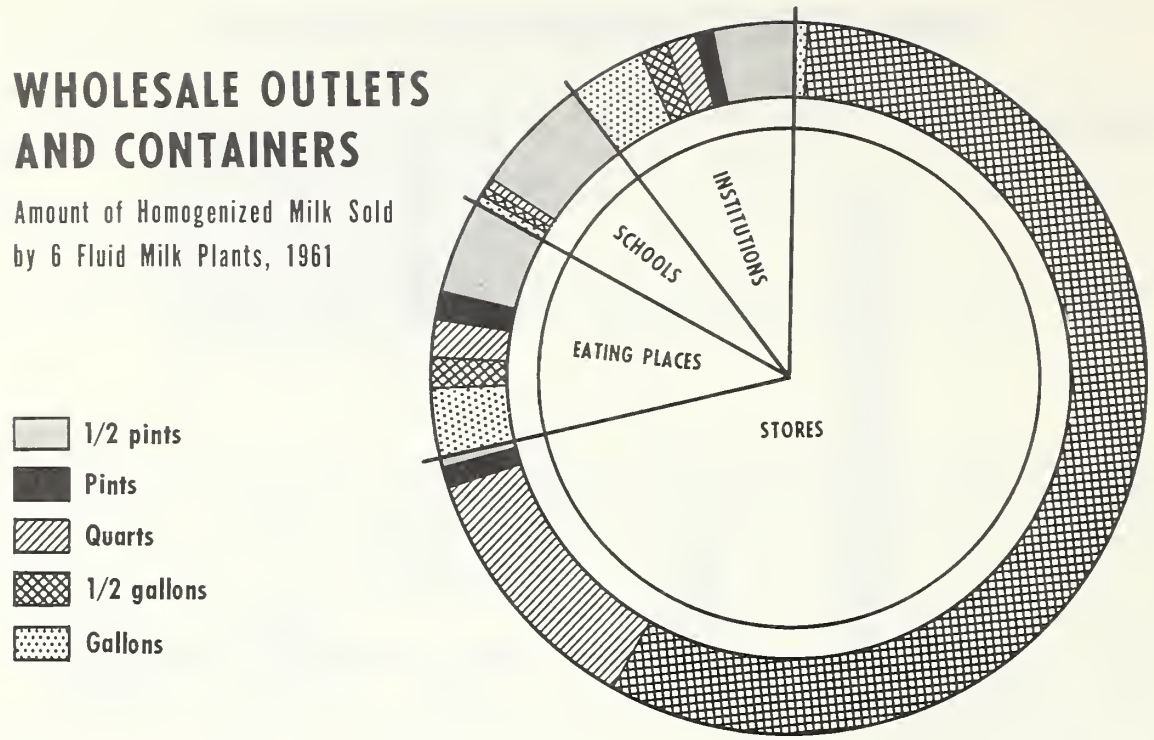

Figure 9

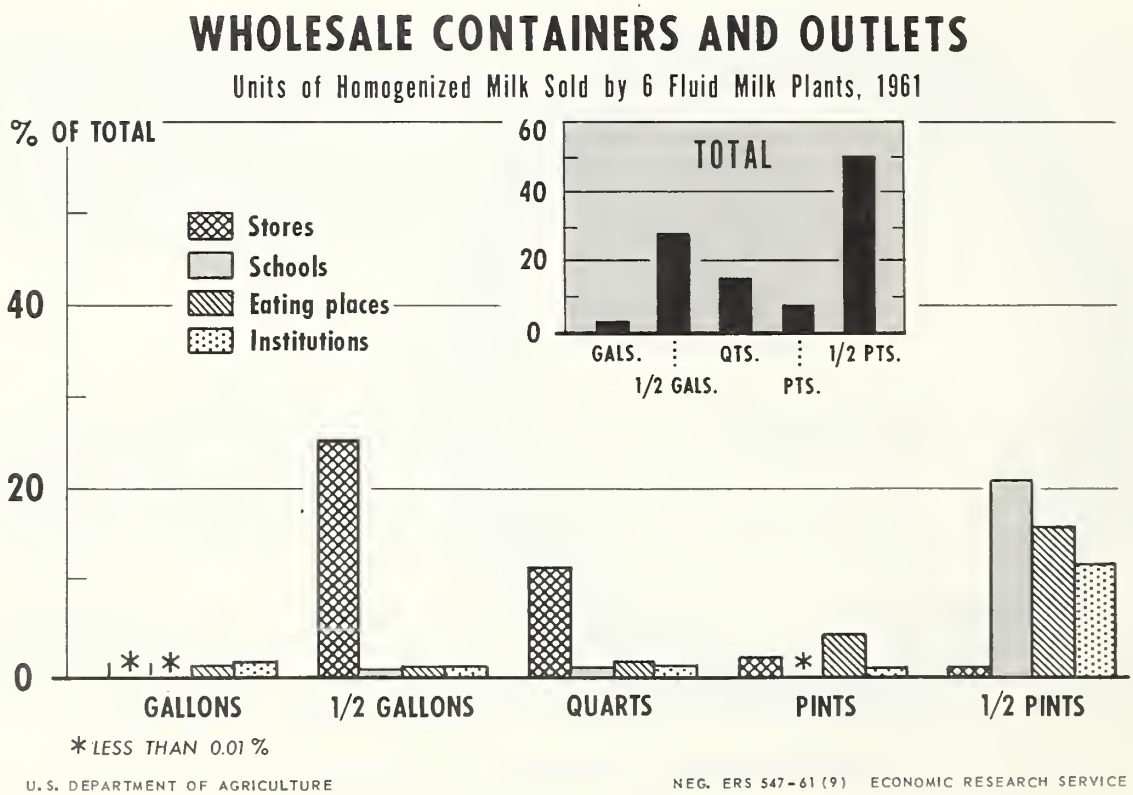

Figure 10

71.5 percent of the total (fig. 9). Eating places took 11.4 percent of the total; institutions, 10.4 percent; and schools, 6.8 percent.

Among container sizes, half-gallons to all outlets were used for 61.5 percent of the total. Following in importance were: Quarts -- 14.9 percent; half-pints -- 13.3 percent; gallons -- 8.2 percent; half-pints -- 13.3 percent; gallons -- 8.2 percent; and pints -- 2.5 percent (fig. 10).

In terms of number of units sold, half-pints represented slightly more than half of the total; half-gallons, about 30 percent; and quarts, about 14 percent.

Gallons of homogenized milk were sold in 5-gallon dispenser cans almost entirely to eating places and institutions. Nearly all half-gallons and quarts were sold to stores, with minor amounts going to eating places and institutions. Half-pints were sold to schools, eating places, and institutions, with schools getting more than two-fifths of the total.

Previously published data in this series showed that 42.5 percent of total sales of fluid milk and cream was retail and 57.5 percent, wholesale. These data, applied to information obtained in the survey, indicate the outlets consuming fluid milk and cream as: Homes, 83.0 percent; schools, 3.8 percent; eating places, 7.7 percent; and institutions, 5.5 percent. This assumes plants in the special survey are representative.

Prices Paid for Raw Milk (MDSC-2, June 1957)

Distributors paid an average of $5.26 per hundredweight for raw milk used for Class I purposes during 1956. This price was adjusted for butterfat differentials and does not include premiums (table 11). During the year, the prices ranged from a low of $4.93 in April to a high of $5.45 in November and December. The variations resulted from changes in the basic price and in the butterfat content of the milk used. The data indicate a definite seasonal pattern in the butterfat content of milk utilized in Class I; present analysis does not show whether this resulted from changes in butterfat content of the individual products or from changes in the product mix of Class I, or both; it is possible that sales of skim milk, buttermilk, chocolate drink, and other low fat products are of greater relative importance in the summer months. Comparable seasonal patterns in butterfat content are not so evident for other class uses.

Table 11.--Prices paid by distributors for raw milk, by class and by percentage of butterfat, January - December 1956

Period	Class I 1/		Class II 2/		Class II 3/		Class III 3/	
	Butterfat test	Price per cwt. 4/	Butterfat test	Price per cwt. 4/	Butterfat test	Price per cwt. 4/	Butterfat test	Price per cwt. 4/
1956	Pct.	Dol.	Pct.	Dol.	Pct.	Dol.	Pct.	Dol.
January..	4.0	5.38	3.8	3.36	4.1	4.61	3.9	3.43
February.	4.0	5.32	4.1	3.51	3.9	4.53	4.0	3.43
March....	3.9	5.12	4.0	3.41	4.0	4.42	4.0	3.38
April....	3.9	4.93	4.2	3.46	3.6	3.85	3.5	2.81
May.....	3.7	5.09	4.1	3.43	3.6	3.87	4.2	3.50
June.....	3.9	5.22	4.0	3.67	3.6	4.15	3.7	3.05
July.....	3.8	5.25	3.6	3.24	3.9	4.26	3.8	3.12
August...	3.8	5.25	3.6	3.25	3.9	4.22	3.7	3.18
September	3.7	5.34	3.7	3.35	4.0	4.39	3.4	3.14
October..	3.8	5.37	3.9	3.89	4.0	4.51	3.5	3.18
November.	4.0	5.45	4.1	3.93	3.5	4.18	3.9	3.29
December.	4.0	5.45	4.1	3.82	3.7	4.03	3.8	3.29

1/ Average for all firms reporting.
2/ Data for firms purchasing on a 2-use classification basis.
3/ Data for firms purchasing on a 3-use classification basis.
4/ Basic price adjusted by butterfat differential to test of milk purchased.

Cost of "Other" Materials for Processing and Resale (MDSC-14, June 1960)

The "other" segment of the cost of materials for processing and resale averaged about 8 cents per dollar of sales during 1952-59 (table 1). This cost consists of raw materials (other than raw milk and cream), ingredients used in fluid items and ice cream, finished products purchased for resale, inventory adjustments for raw materials and finished products, and income or expense for hauling raw materials.

Raw milk and cream is frequently hauled from the farm in company-owned trucks at a charge to farmers. Expense or income from hauling depends on which is larger: expenses or charges to farmers. This item and inventory adjustments are not further considered in this article.

The "other" costs of materials for processing and resale are, individually, small compared with costs of raw milk and cream. Yet, collectively, they are important; during the 1956-59 period they amounted to two to three times as much as the net returns (before income taxes).

Products Purchased for Resale

Finished products purchased for resale accounted for some 60 percent of the "other" costs, averaging a little less than 5 cents per dollar of sales during the 1956-59 period (fig. 11). Butter, eggs, cheese, margarine, and orange juice purchased for resale by the milk department were the most important: costs were 4.11 cents per dollar of sales in 1956, 4.49 cents in 1957, 4.20 cents in 1958, and 4.59 cents in 1959. Assuming that markups have remained about the same, it appears that these products may be becoming more important in the fluid milk distributor's business. However, it seems that their importance does not vary seasonally: Average costs by quarters for the 4-year period vary less than 2 percent from the annual average as shown below:

	Cents		Cents
1st quarter	4.27	3rd quarter	4.42
2nd quarter	4.31	4th quarter	4.40
		Annual average	4.35

Ice cream novelties were the most important product purchased for resale by the ice cream department. The novelties, plus other items such as ice cream store products, averaged a little more than 0.6 cent per dollar of sales over the 4-year period. The ice cream department, as contrasted with the milk department, had a definite seasonal pattern on cost of resale products:

	Cents		Cents
1st quarter	0.41	3rd quarter	0.76
2nd quarter	.81	4th quarter	.50

Raw Materials

In addition to raw milk and cream, fluid milk distributors also use condensed skim, nonfat dry milk (powder), and vegetable fat. These raw materials cost slightly

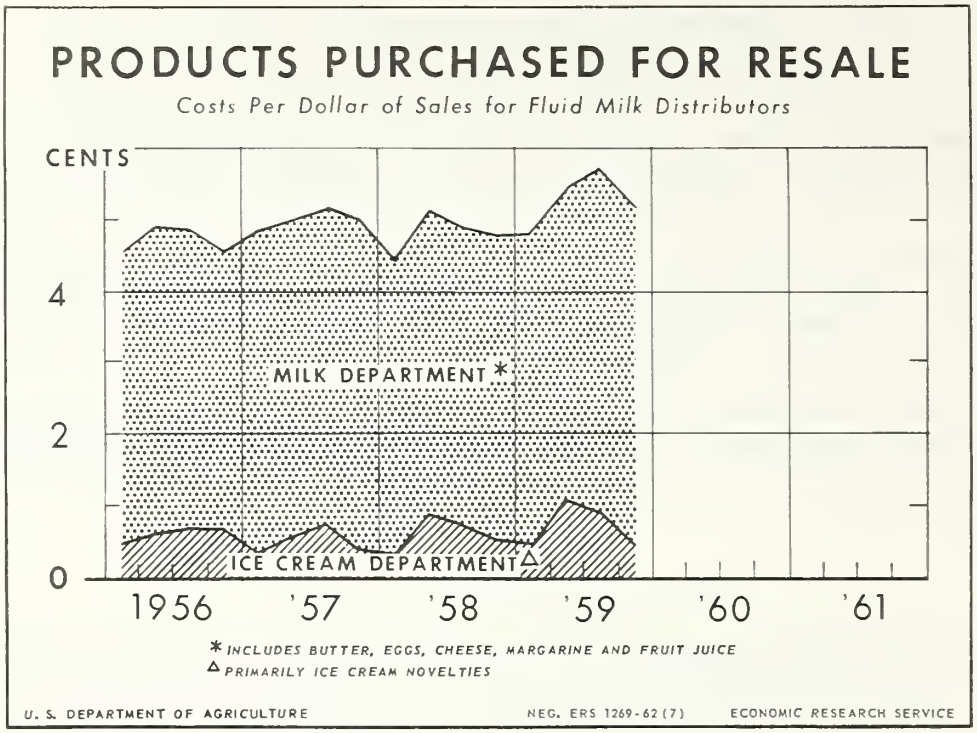

Figure 11

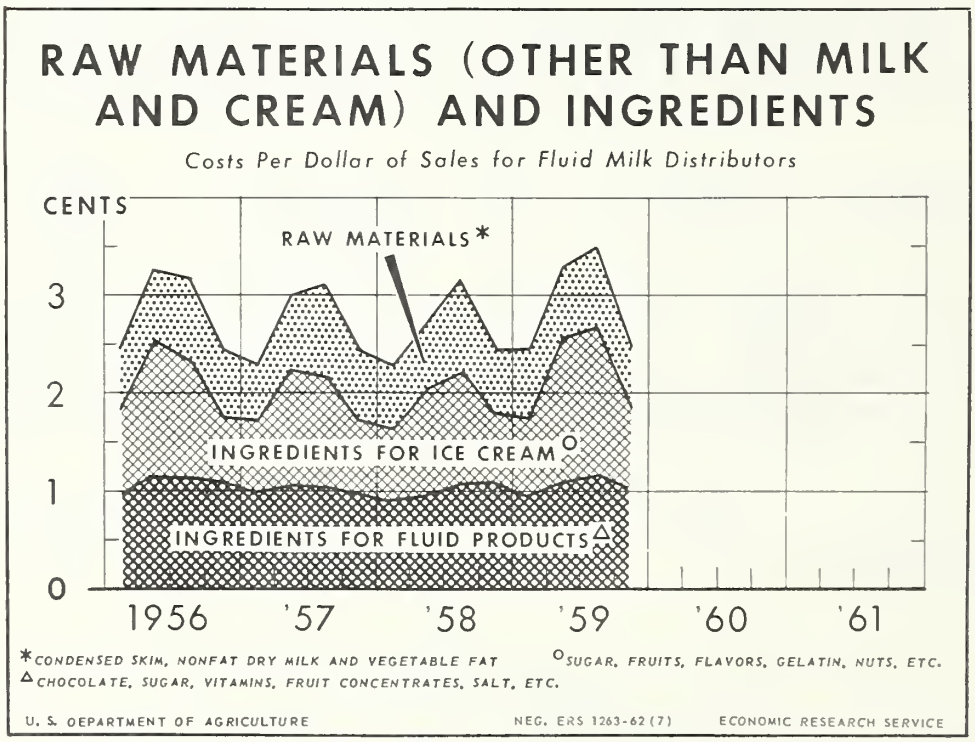

Figure 12

more than 0.7 cent per dollar of sales during 1956-59 and consisted of about 0.11 cent for condensed skim, 0.53 cent for nonfat dry milk, and 0.07 cent for vegetable fat. Costs for these materials, per dollar of sales, remained very steady, averaging 0.75 cent in 1956, 0.73 cent in 1957, 0.73 cent in 1958, and 0.72 cent in 1959. Quarterly cost data for the 4-year period, however, reflect the seasonal use of these materials in frozen products:

	Cents		Cents
1st quarter	0.69	3rd quarter	0.88
2nd quarter	.71	4th quarter	.66

Ingredients

The cost of non-milk ingredients used by fluid milk distributors was divided about equally between fluid products and frozen products. Total cost of ingredients averaged a little more than 2 cents per dollar of sales during 1956-59 (fig. 12).

Ingredients purchased for use in fluid products were principally chocolate, sugar, vitamins, fruit concentrates, and salt. Costs of these ingredients averaged about 1 cent per dollar of sales in each of the 4 years. The first-quarter costs were lowest in each year and averaged lowest for the 4 years:

	Cents		Cents
1st quarter	0.93	3rd quarter	1.07
2nd quarter	1.03	4th quarter	1.02

This probably was because about 15 percent of the fruit drinks were sold in the first quarter, 29 percent in the second quarter, 36 percent in the third quarter, and 20 percent in the fourth quarter.

Ingredients purchased for use in ice cream and related products were principally sugar, fruits, flavors, gelatin, and nuts. Costs for these ingredients of frozen products averaged slightly more than 1 cent per dollar of sales during the 1956-59 period. The costs did not vary substantially from year to year but were somewhat higher in 1959 than in previous years. Seasonally, costs of ice cream ingredients have the same pattern as frozen products purchased for resale--that is, considerably higher in the spring and summer quarters:

	Cents		Cents
1st quarter	0.80	3rd quarter	1.27
2nd quarter	1.30	4th quarter	.76

This quarterly variation in costs is about the same as the quarterly variation in sales of ice cream expressed as a percentage of annual sales: 17 percent in the first quarter, 31 percent in the second quarter, 33 percent in the third quarter, and 19 percent in the fourth quarter.

The Operating Cost Dollar (MDSC-4, Dec. 1957)

Costs charged to the delivery and selling function accounted for almost one-half of the total operating cost dollar in 1957. The importance of this expense was shown by the proportion of individual cost elements: Of the total of 52.6 cents charged to salaries, wages, and commissions (not including office personnel who handle accounts receivable, payroll records, etc.), delivery and selling take 31.8 cents, or 61 percent of the total. Of the total of 14.1 cents charged to repairs, rent, and depreciation, the amount charged against trucks and other delivery and selling equipment is 7.1 cents, more than all others combined (table 12). Of the 5.8 cents of operating expenses,

Table 12.--The operating cost dollar allocated by function, 80 selected dairy plant firms, July-September 1957

Cost item	Total expenses	Procurement	Processing	Delivery and selling	Administrative
	Cents	Cents	Cents	Cents	Cents
Total 1/	100.0	1.5	38.2	49.3	11.1
Salaries, wages, etc. 2/	52.6	0.8	13.0	31.8	7.0
Containers	14.7	3/	14.6	3/	---
Operating expences	5.8	.2	1.8	3.4	.4
Repairs, rent, and depreciation	14.1	.4	6.0	7.1	.6
Taxes	1.1	3/	.4	.5	.2
Insurance	.8	3/	.2	.4	.2
Services	4.1	3/	1.9	1.1	1.0
Advertising	3.7	3/	---	3.7	3/
General	3.1	3/	.1	1.3	1.6

1/ Totals do not add due to rounding.
2/ Includes State unemployment, Federal old age, workmen's compensation, and employee benefits.
3/ Less than 0.05 cents.

the cost of gasoline, oil, and tires alone was 3.0 cents, or over half of the total. In the minor expense categories, insurance on trucks and drivers was more than half of the total insurance expense. Nearly all of the advertising cost of 3.7 cents was a delivery and selling expense.

Processing expenses were the second largest, accounting for about 38 cents of the total operating cost dollar. Most of the processing expenses were in the three cost elements of: (1) containers; (2) wages, salaries, and commissions; and (3) rent, repairs, and depreciation. Of the total container cost of 14.7 cents, 14.6 cents was charged to the processing function. The 13.0 cents for wages, salaries, and commissions for processing was 25 percent of the total of 52.6 cents for this cost element. Of the total of 14.1 cents for rent, repairs, and depreciation, processing expenses were 6.0 cents, 43 percent of the total.

Administrative expenses took 11 cents of the operating cost dollar. Over 60 percent of the total charged to these expenses was in the 7 cents for wages, salaries, and commissions. Most of the remaining 4 cents was for such cost elements as legal expenses, licenses (other than automobile and truck licenses), permits, payments to governmental regulatory agencies, and losses from bad debts.

Procurement expenses, in total, were only 1.5 cents. Of this amount, more than half was for personnel; most of the remainder was operating costs for automobiles.

Labor Costs (MDSC-1, March 1957)

Salaries, wages, and commissions, second only to raw milk and cream costs for milk distributors increased about 20 percent during 1952-56. Labor cost was 21.7 percent of sales value of product in 1956 as compared to 19.0 percent in 1952; thus, in terms of sales value of product, the cost of labor increased 14 percent during this period.

Delivery costs accounted for over 60 percent of the total salaries, wages, and commissions (table 13). In addition, it can be assumed that a substantial part of the administrative cost arose from the delivery function. Most of the increased cost of labor occurred in the delivery function.

Fringe salary and wage costs added between 5 percent and 6 percent to the labor cost. During the last two quarters of 1956 these fringe costs were more than 1 percent of the sales value and were about equal to net profits left after payment of income taxes.

Table 13.--Salaries, wages, and commissions, per hundred pounds of milk purchased for processing and resale, July-October 1955 to October-December 1956

Item	1955		1956			
	July-September	October-December	January-March	April-June	July-September	October-December
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Salaries, wages, and commissions:						
Procurement	0.03	0.03	0.03	0.03	0.03	0.03
Processing	.56	.54	.54	.58	.59	.57
Delivery	1.33	1.31	1.33	1.40	1.43	1.43
Administrative	.29	.29	.29	.30	.32	.31
Total	2.21	2.17	2.19	2.31	2.37	2.34
Fringe salary and wage expenses:						
State unemployment	0.01	0.01	0.02	0.02	0.02	0.01
Federal old age	.02	.02	.04	.04	.04	.04
Workmen's compensation	.02	.02	.03	.03	.03	.03
Employee benefits	.03	.03	.04	.04	.04	.04
Total	0.08	0.08	0.13	0.13	0.13	0.12
Salary and wage cost	2.30	2.25	2.32	2.44	2.50	2.46

Trends in Personnel Rates and Productivity (MDSC-5, March 1958)

Increasing efficiency in the use of personnel partially offset the increasing wage and salary rates during the period July-September 1955 through July-September 1957 (tables 14 and 15). The number of minutes of personnel time required to process a hundredweight of milk decreased by about 7 percent, while the overall wage and salary rates increased by about 19 percent.

The changes in productivity and rates varied widely among the various categories of personnel. For fieldmen, the increase in wage rates of some 12 percent was more than offset by an increase of over 20 percent in efficiency. Most of the 21 percent increase in plant labor wage rates was absorbed by a 14 percent increase in efficiency. The overall increase in unit costs resulted from changes in delivery costs; these costs accounted for more than half of all personnel costs. During the 9 quarters' period delivery wage rates increased over 18 percent, while labor efficiency increased only 2 percent. The 15 percent increase in office personnel salary rates resulted in a comparable net increase in unit costs since there was no definite change in efficiency. Net unit cost for executives also increased as a result of a 19 percent rise in salary rates, but only an 11 percent increase in efficiency.

Table 14.--Wages and salary rates per hour (corrected for seasonal variations) 1/

Period	Personnel categories				
				Administrative	
	Field	Plant	Delivery	Office	Executives
	Dollars	Dollars	Dollars	Dollars	Dollars
1955					
July-Sept.	1.82	1.43	1.94	1.47	5.12
Oct.-Dec.	1.73	1.41	1.94	1.48	5.02
1956					
Jan.-Mar.	1.73	1.46	1.98	1.49	5.42
Apr.-June	1.71	1.45	2.08	1.53	5.67
July-Sept.	1.74	1.53	2.17	1.55	5.87
Oct.-Dec.	1.86	1.63	2.24	1.59	6.24
1957					
Jan.-Mar.	1.92	1.64	2.31	1.65	6.03
Apr.-June	1.98	1.73	2.30	1.68	5.99
July-Sept.	2.00	1.70	2.29	1.73	6.04

1/ Computed on the basis of total wages and salaries paid and total hours worked. Seasonally adjusted to eliminate variations due to Christmas bonuses, paid vacations and holidays, etc.

Table 15.--Minutes of personnel time: Per hundred pounds of milk and cream processed (adjusted for seasonal variations)

Period	Personnel categories					
				Administrative		Total 1/
	Field	Plant	Delivery	Office	Executives	
	Minutes	Minutes	Minutes	Minutes	Minutes	Minutes
1955						
July-Sept.	1.7	22.9	34.3	6.2	1.9	67.1
Oct.-Dec.	1.7	23.0	38.2	6.4	1.8	71.2
1956						
Jan.-Mar.	1.8	22.4	37.1	6.6	1.7	69.7
Apr.-June	1.7	22.2	37.1	6.4	1.7	69.1
July-Sept.	1.7	21.5	36.2	6.7	1.6	67.7
Oct.-Dec.	1.6	20.6	32.8	6.4	1.6	63.0
1957						
Jan.-Mar.	1.4	20.2	34.4	6.2	1.6	63.9
Apr.-June	1.4	19.7	34.9	6.5	1.6	64.0
July-Sept.	1.3	19.7	36.0	6.2	1.7	64.9

1/ Because of rounding, does not always equal sum of components.

Personnel costs per 100 pounds of milk processed in fluid milk plants increased during the 5-year period July 1955 - June 1960. More efficient use of labor was not sufficient to offset higher hourly earnings for labor. Although total personnel time, per 100 pounds of milk processed, decreased from 67.5 minutes in July 1955 - June 1956 (fig. 13) to 58.9 minutes in July 1959 - June 1960, personnel cost increased from $2.09 to $2.30 per 100 pounds during this period (fig. 14). This cost did not include social security, workmen's compensation, unemployment insurance, etc., which collectively would add about 15 percent to the personnel costs.

Hourly earnings went up for all categories of personnel, but by varying rates: Fieldmen, 19 percent; plant employees, 35 percent; deliverymen, 26 percent; office employees, 22 percent; and executives, 11 percent (fig. 15). However, for fieldmen, plant employees, and executives, increased efficiency more than offset increases in hourly earnings, and personnel cost per 100 pounds of milk processed decreased.

For fieldmen the minutes of time per 100 pounds decreased from about 1.8 to about 1.1 -- a drop of nearly 40 percent. For plant employees, the minutes decreased from about 23 to about 15 -- a drop of nearly 35 percent. For executives the minutes decreased from 2.0 to 1.6 -- a drop of 25 percent. As a result, despite the increases in hourly earnings, personnel costs per 100 pounds of milk processed decreased some 18 percent for fieldmen, 10 percent for plant employees and 12 percent for executives.

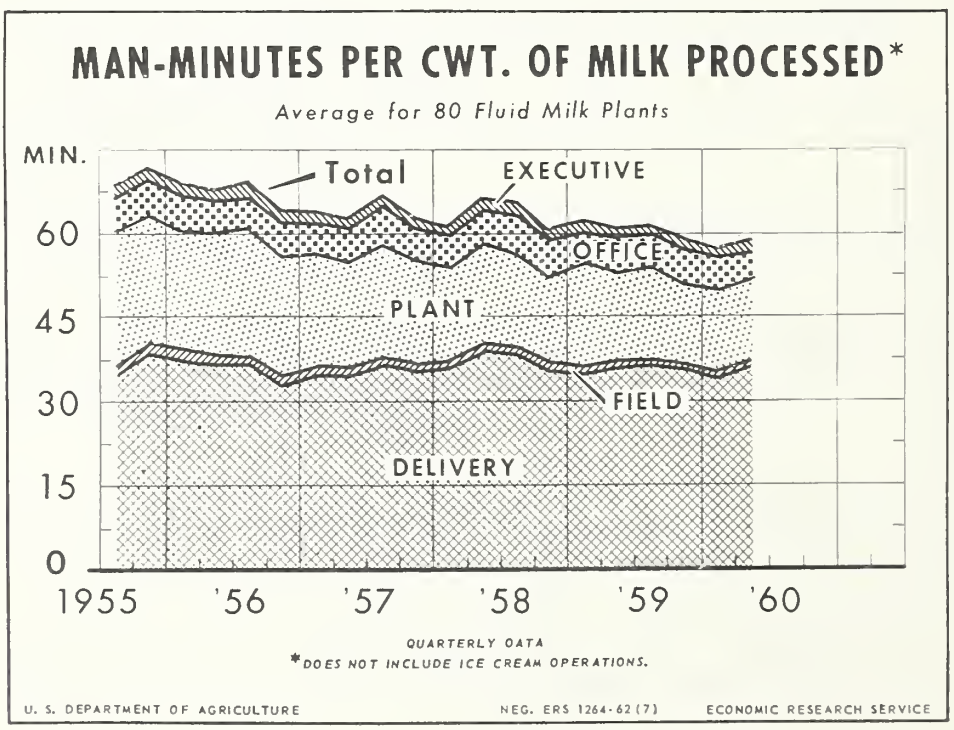

Figure 13

The increases in earnings were not offset by efficiency for deliverymen. While earnings increased by 26 percent, efficiency increased by only 4 percent. Consequently, delivery labor costs per 100 pounds increased by 21 percent. Delivery labor costs were 54 percent of total labor costs in July 1955 - June 1956; they were 62 percent of the total in July 1959 - June 1960.

Office labor per 100 pounds dropped from 6.4 minutes to 6.0 minutes, an efficiency gain of about 7 percent. This was not enough to offset wage rate increases: costs per 100 pounds increased about 20 percent.

Considerably more information would be needed to determine the factors involved in these shifts in labor costs. However, some probable factors may be mentioned. The reduction in costs for fieldmen probably results from the shift away from small-scale, part-time dairy farming to large-scale commercial dairy farming. Even though the milk supply has increased, the number of dairy farmers has decreased substantially; consequently, fieldmen have fewer dairy farms to supervise. Lower costs for plant labor were the product of modern equipment with continuous-flow processing, cleaning-in-place, and other efficiency factors. The only apparent factor in lower executive costs is that salary increases have not kept up with increases in volume of product processed.

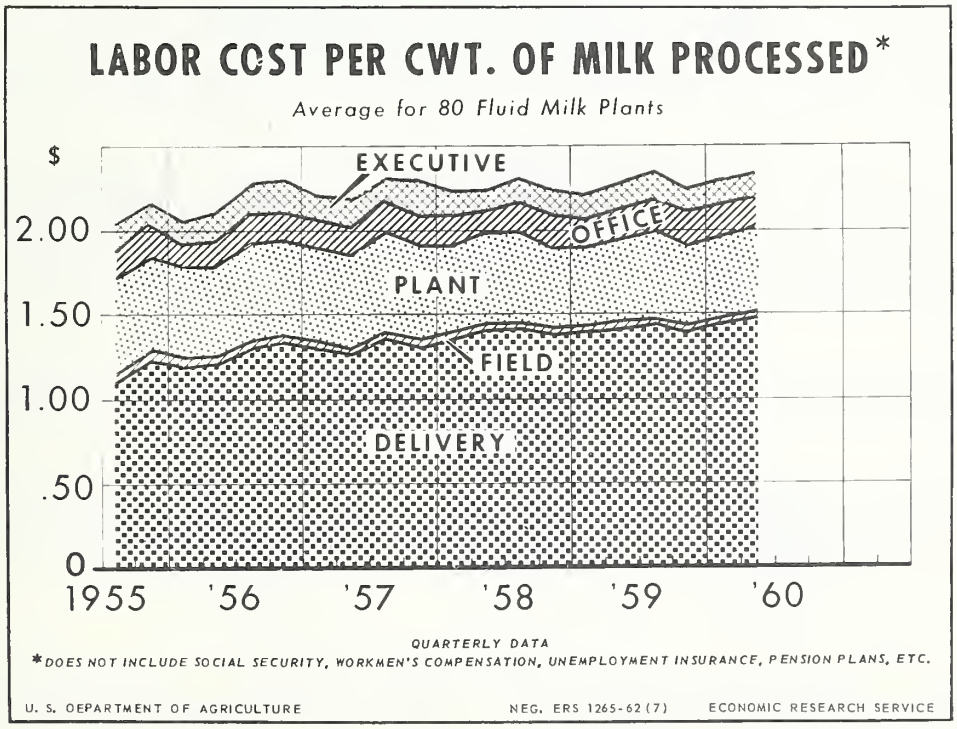

Figure 14

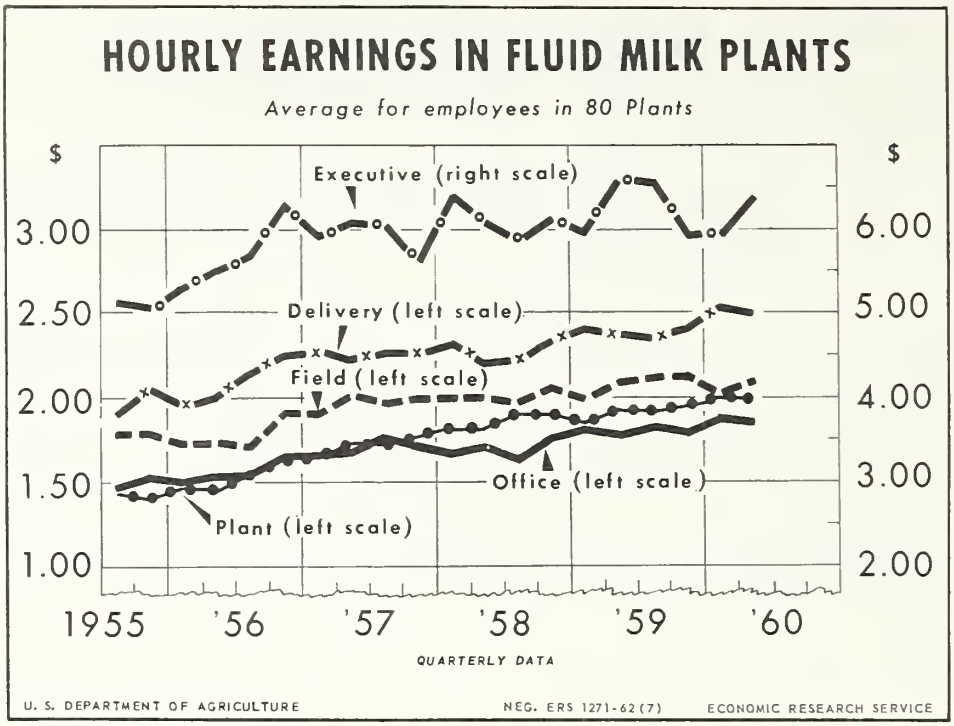

Figure 15

The increase in costs for deliverymen is probably the result of the system of payment. Deliverymen are commonly paid a basic wage plus a bonus based upon units of product delivered. Any increase in either the basic wage or payment per unit results in increased cost. The delivery operation does not lend itself to increases in the amount of milk that can be delivered, per deliveryman, on either home delivery or wholesale delivery. Most of the reduction of 4 percent in delivery time per 100 pounds apparently resulted from the shift from home delivery to wholesale delivery.

Little information is available about efficiency factors for office labor. The reduction of 7 percent in labor time may have resulted from mechanization of office procedures or the shift from home delivery to wholesale delivery (fewer accounts). In at least some instances, mechanization has not reduced the office labor staff but rather has provided additional information needed for improved operations.

Workweek, Earnings, and Rates of Pay for Fluid Milk Firms 5/ July-September 1960 (MDSC-17, March 1961)

Fluid milk firms operate 5 or 6 days a week, according to a study of a representative group of firms for the period July-September 1960. Processing, when operated 5 days a week, frequently is on a schedule of Monday, Tuesday, Thursday, Friday, and Saturday. Deliveries, with but few exceptions, are made 6 days a week. Offices operate 5, 5-1/2, or 6 days a week.

5/ For an independent and somewhat different study see "Wage Structure, Fluid Milk Industry, April-June 1960," by Fred Mohr, BLS report 174, Bureau of Labor Statistics, U. S. Department of Labor.

The basic workweek for fluid milk firms ranged from a low of 38 hours to a high of 60 hours; 40- and 48-hour weeks were most common (fig. 16). Office workers had the shortest basic workweek; deliverymen, the longest. Large firms generally had a shorter basic workweek than medium and small ones; and among those of a given size, northern firms generally had shorter basic workweeks than southern firms.

The 40-hour week predominates. Fifty percent of the firms reported the 40-hour week for plant workers, 38 percent for deliverymen, and 70 percent for office workers.

Relatively few firms reported work weeks of 41-44 hours: About 8 percent of the firms for plant workers, about 6 percent for deliverymen, and about 18 percent for office workers. A week of 45-48 hours was fairly common for plant workers (30 percent of firms) and for deliverymen (35 percent) but infrequent for office workers (9 percent). Work in excess of 48 hours was infrequent except for deliverymen. One firm reported a 38-hour week for office workers.

Plant Workers

With a 40-hour workweek, some firms processed milk 8 hours a day, 5 days a week; others operate 8 hours a day, 6 days a week. In the latter case, with a processing week of 48 hours, each individual employee worked 5 days a week, and 1/6 of the plant employees were off work on each of the 6 processing days. Nearly all firms with a 48-hour week for plant workers processed milk 8 hours a day, 6 days a week.

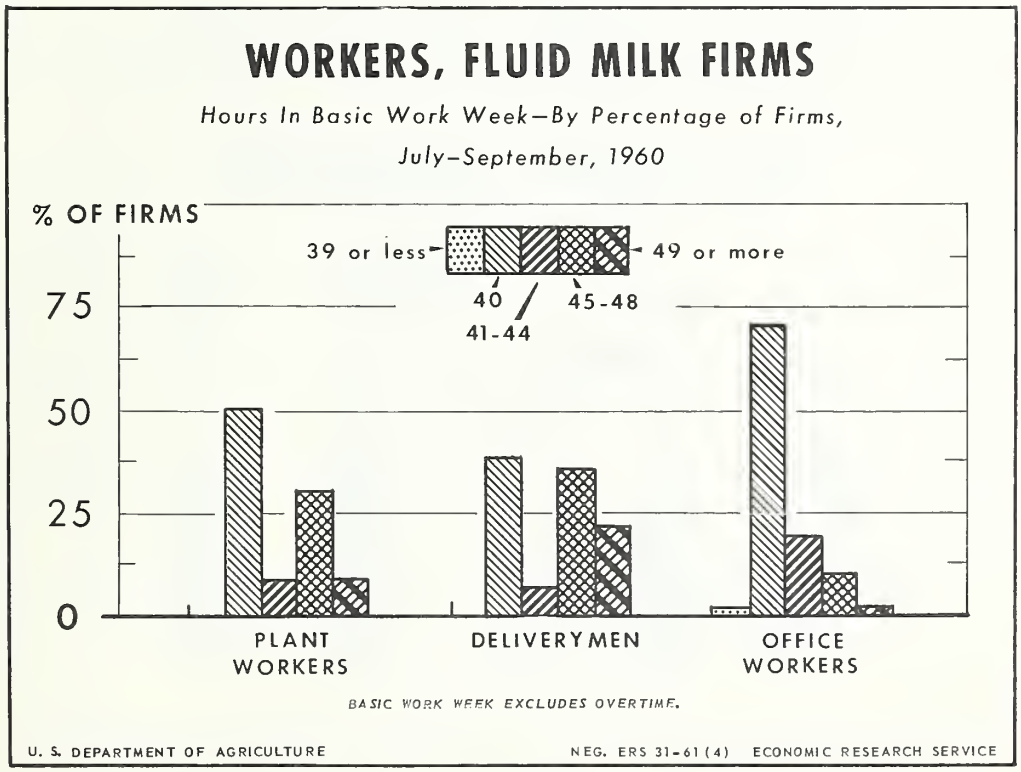

Figure 16

Size of operations did not appear to be an important factor in length of the work week for plant employees: In large, medium, and small firms, about 50 percent reported a workweek of 40 hours; the 45- 48-hour week was more frequent in large and medium firms than in small ones. Geographic location did appear to be important: Sixty percent of the northern firms but only 35 percent of the southern firms reported a 40-hour week for plant workers; on the other hand, 50 percent of the southern firms but only 18 percent of the northern firms reported a 45- 48-hour week (fig. 17).

Deliverymen

Since nearly all delivery operations were on a 6-day week, nearly all firms with a 40-hour week had one "swing" or relief, deliveryman for each five regular deliverymen. Each deliveryman works an 8-hour day, 5 days a week. But for 35 percent of the firms, deliverymen work 6 days a week.

Both size of operation and geographic location were important factors in the length of the workweek for deliverymen. Nearly 60 percent of the large firms but less than 30 percent of the medium and small firms reported a workweek of 40 hours for deliverymen. At the other extreme only 11 percent of the large firms but 24 percent of the medium and 28 percent of the small firms reported a workweek of more than 48 hours. Almost 50 percent of the northern firms but less than 25 percent of the southern firms, reported a workweek of 40 hours for deliverymen; about 15 percent of the northern firms and about 30 percent of the southern firms had workweeks of over 48 hours (fig. 18).

Office Workers

It is estimated that a minimum of 75 percent of all office work results from the delivery operations. Therefore, since delivery is on a 6-day week, most offices,

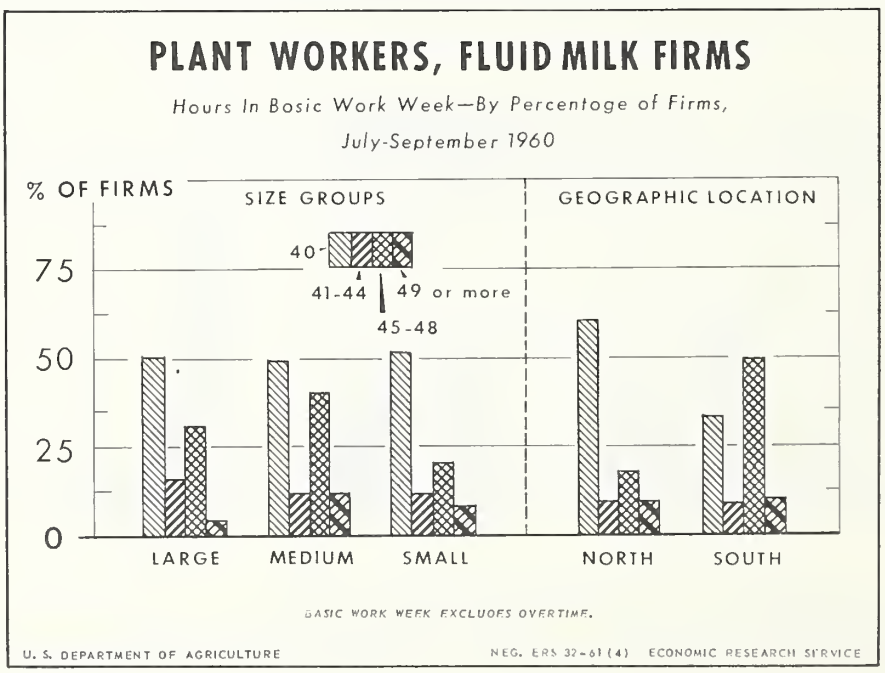

Figure 17

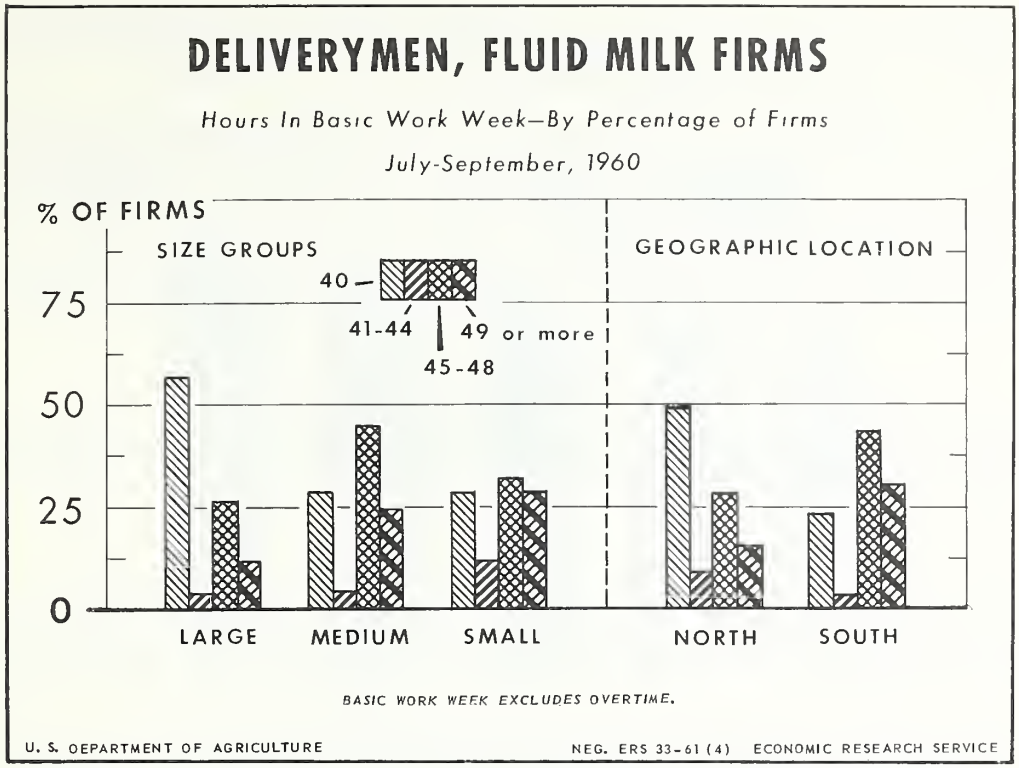

Figure 18

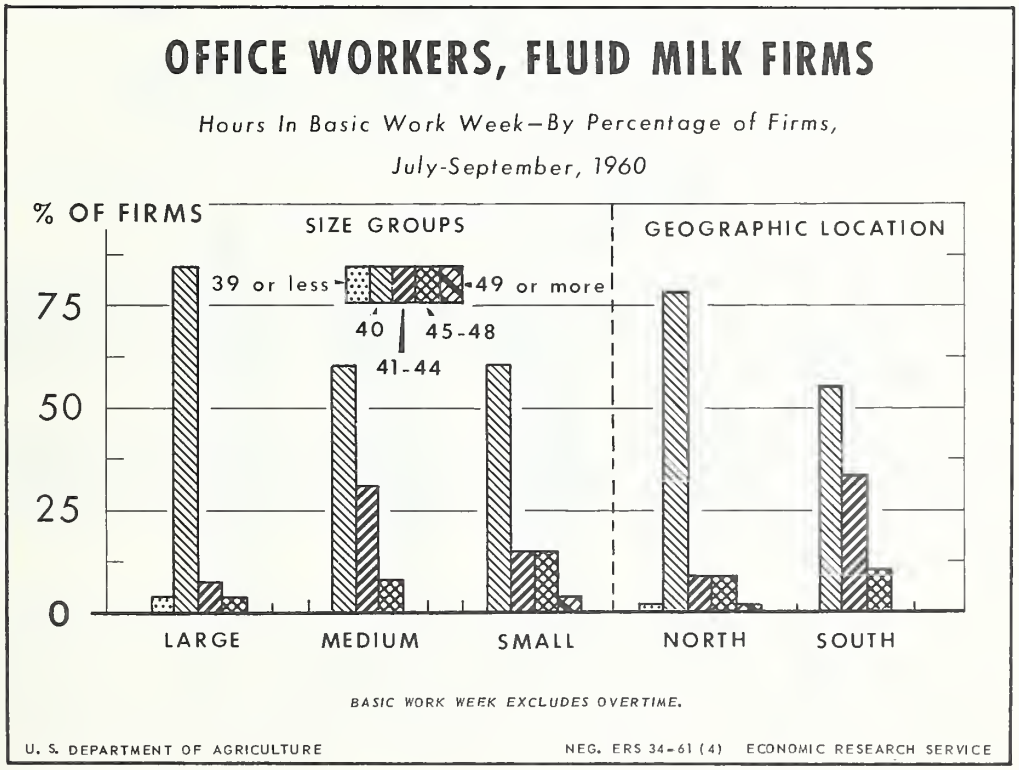

Figure 19

for at least some functions, work 5-1/2 or 6 days a week. In most firms the individual office employee works 8 hours a day, 5 days a week, but a part of the labor force is off work each day Monday through Saturday.

For office workers, as for deliverymen, size of operation and geographic location were factors in the length of the workweek. One large northern firm had a workweek of 38 hours for the office workers. Eighty-five percent of the large firms and 60 percent of the medium and small firms had workweeks of 40 hours. About 77 percent of the northern firms and 55 percent of the southern firms had 40-hour weeks. The 44-hour week was fairly common in the medium-sized firms and in the southern firms (fig. 19).

Fieldmen

Workweeks of fieldmen were not analyzed because few firms hire them and many fieldmen work only part time.

Overtime

Overtime work was common in fluid milk firms. The frequency of overtime was related to both the function and the length of the basic workweek: Overtime occurred most often for plant workers and for the 40-hour week.

About 35 percent of all firms reported overtime for plant workers. Of the firms with a 40-hour basic workweek, 41 percent reported overtime.

Less than 15 percent of the firms reported overtime for deliverymen. Half of these were for deliverymen on a 40-hour week.

Overtime for office workers was reported by 18 percent of the firms. Of the firms with a 40-hour week, 21 percent reported overtime.

Hourly Earnings and Rates of Pay

Deliverymen receive the highest pay of all wage employees of fluid milk firms. The average wage rate of deliverymen, $2.35 an hour, was 15 percent higher than for fieldmen, 21 percent higher than for plant workers, and 29 percent higher than for office workers (fig. 20).

Wage incomes of deliverymen exceeded that of other workers by considerably more than would be indicated by rates of pay. The individual deliveryman, on the average, worked more hours per week than other workers. Office workers, on the other hand, had the lowest wage income because they had both the lowest rate of pay and shortest workweek.

Hourly rates of pay averaged higher in large firms -- about 11 percent higher than in medium-sized firms, and about 14 percent higher than in small firms. The largest difference was for deliverymen, both in absolute amounts and in relative amounts. Small firms paid the lowest rates for each worker category (fig. 20). Office workers received the same rates of pay from large and medium-sized firms.

Northern firms paid higher average wages than southern firms for all workers and higher wages for each wage category except office workers. In northern firms,

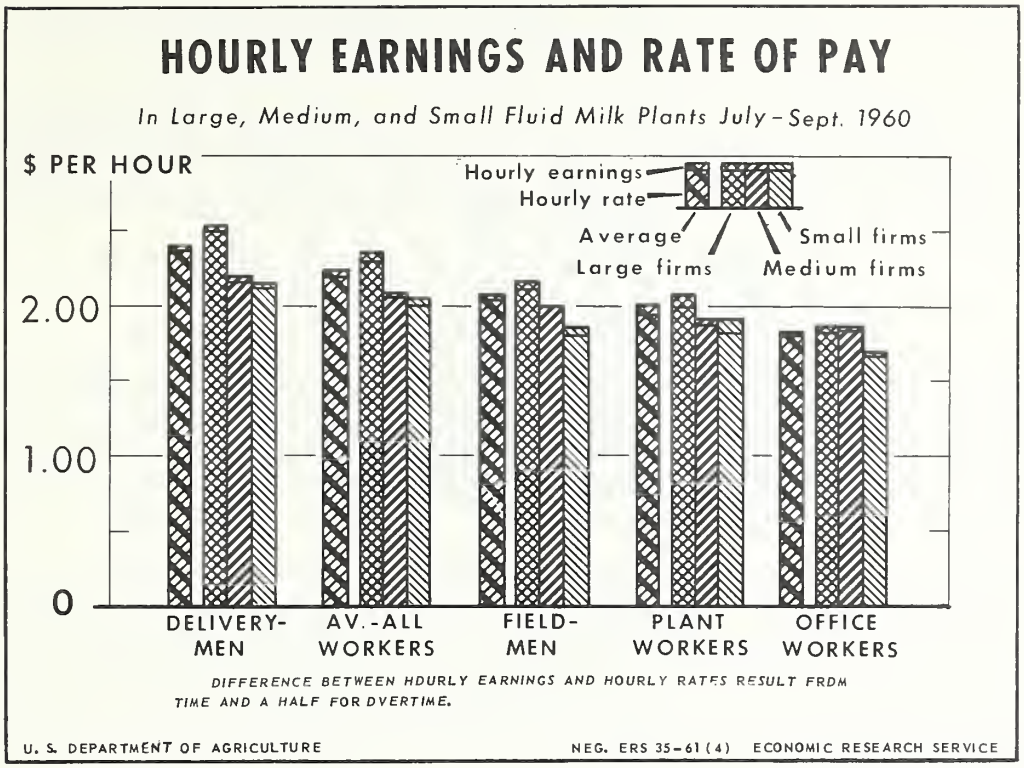

Figure 20

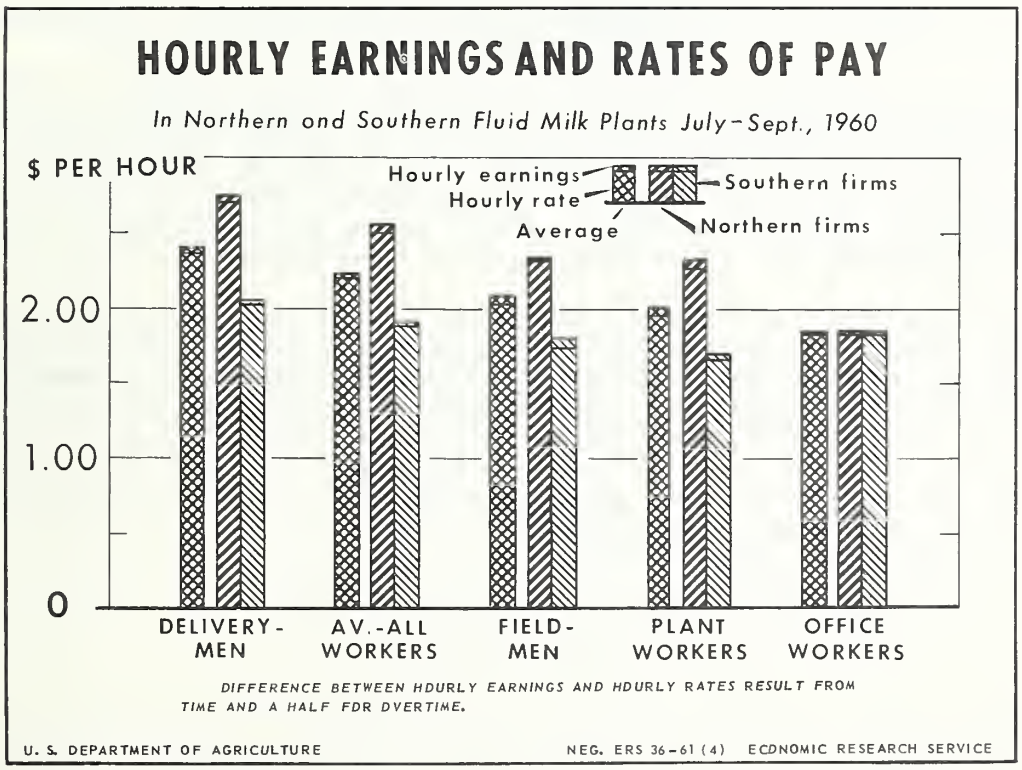

Figure 21

average wages for all workers were about 30 percent higher; wages of deliverymen, 33 percent higher; and wages of plant workers, 37 percent higher (fig. 21).

Overtime added to the earnings of employees. Average earnings per hour were about 2 percent higher than average rates per hour. Plant workers on a 40-hour week gained most from overtime; their hourly earnings were over 3 percent higher than their hourly rates. Office workers gained the least from overtime -- less than 1/2 of 1 percent.

Executives

Earnings of executives of fluid milk firms were not analyzed in terms of hourly rates or hourly income since they are paid on a monthly basis. They do not receive extra pay for overtime but frequently receive bonuses based upon sales or profits. Nearly two-thirds of the firms reported a longer workweek for executives than for office workers.

Executives' salaries averaged $1,175 per month and were highest for medium-sized firms. There appear to be little or no consistency in executive salaries either by size group or by geographic distribution of firms. For large firms, average salaries ranged from $500 to $4,231 per month; for medium-sized firms, from $607 to $4,487 per month; and for small firms, $275 to $2,555 per month. For northern firms, average salaries per firm ranged from $275 to $4,487 per month; for southern firms, from $500 to $4,231 per month.

Wages, Labor Output, and Unit Costs of Labor for Fluid Milk Plants, July-September, 1960 (MDSC-18, June 1961)

Wages, labor output, and unit labor costs were somewhat related to size in the fluid milk plants (classified as small, medium, and large) covered by this report. Large plants paid the highest average wages for all workers and the highest wages for deliverymen; small plants paid the lowest average wages and the lowest wages for deliverymen and office workers. Large plants had the most labor output for plant and office workers, but the least labor output for deliverymen.

Output, measured in terms of hundredweight of product per hour of labor, was closely associated with wage levels when plants were classified by high, medium, and low wage rates. Output increased as wages increased for all categories of labor. One or two factors were probably involved: First, high wages provided an incentive for management to mechanize operations; second, wages reflected the level of skills required in plants with various levels of mechanization. However, except for office workers, greater output generally was not sufficient to offset higher wages; consequently, unit costs measured in terms of labor cost per hundredweight of product were, on the average, also higher.

Plant Workers

Average wages for plant workers varied relatively little among plants by size categories (fig. 22). The range in wages was from $0.94 to $2.86 per hour for large plants, $1.24 to $2.96 for medium-sized plants, and $1.10 to $3.96 for small plants. Output and unit costs of plant labor, on the other hand were closely related to plant size. Large firms, as a group, paid only 1 percent more than average wages; but output was 6 percent more than average, and labor costs per unit were 6 percent below average.

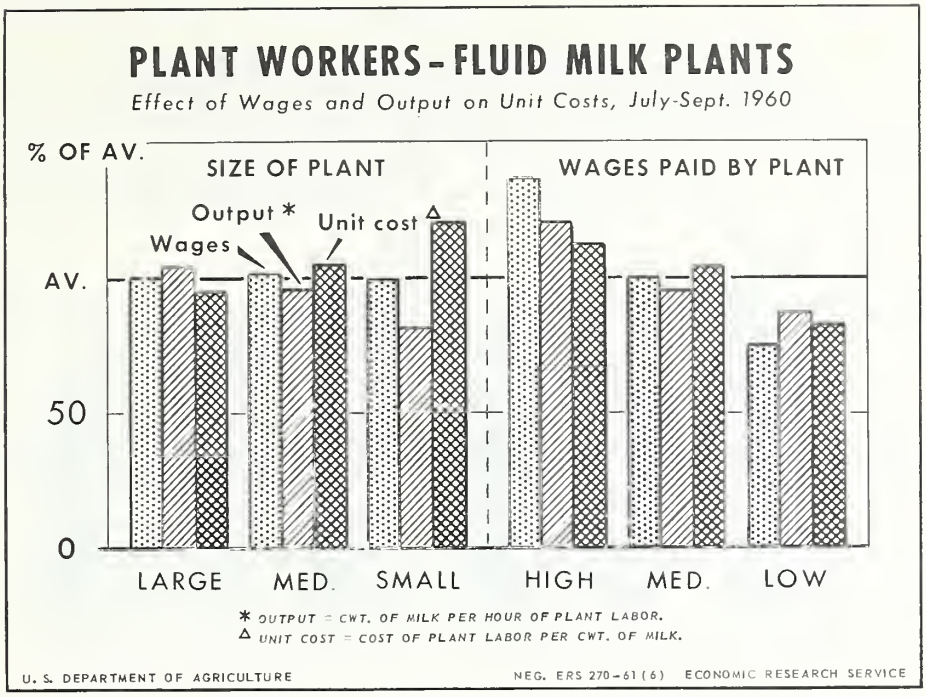

Figure 22

Medium-sized plants paid below average wages by 4 percent; but output was 7 percent below average, and unit costs were above average by 4 percent. Small plants paid nearly 4 percent below average wages but had the least output (18 percent below average); therefore, unit costs were above average by more than 20 percent.

Output was closely related to rate of wages for plant workers: Wages for plants with high rates (range -- $2.29 to $3.96 per hour) were 37 percent above the average for all plants. Labor output of 22 percent more than average offset most of the high rates: Unit costs were 12 percent above average.

Wages for plants with medium rates (range-- $1.72 to $2.26 per hour) were about average. Output of 5 percent less than average resulted in unit costs above average by 4 percent.

Wages for plants with low rates (range -- $0.94 to $1.64 per hour) were 26 percent below average. Much of this saving was lost in a very low output of 18 percent below average. Unit costs were 11 percent below average.

Deliverymen

For deliverymen, rates of wages were somewhat related to size of enterprise. The largest firms had the highest average wages, and the smallest firms, the lowest average (fig. 23). This same relationship also held for the upper and lower limits of the ranges for each size category: For large plants, the range was from $1.47 to $4.34 per hour; for medium-sized plants, $1.31 to $3.69; and for small plants, $0.94 to $3.52.

The delivery function apparently does not lend itself to economies of scale: Output of delivery labor was not related to size of plant. Large plants paid the highest

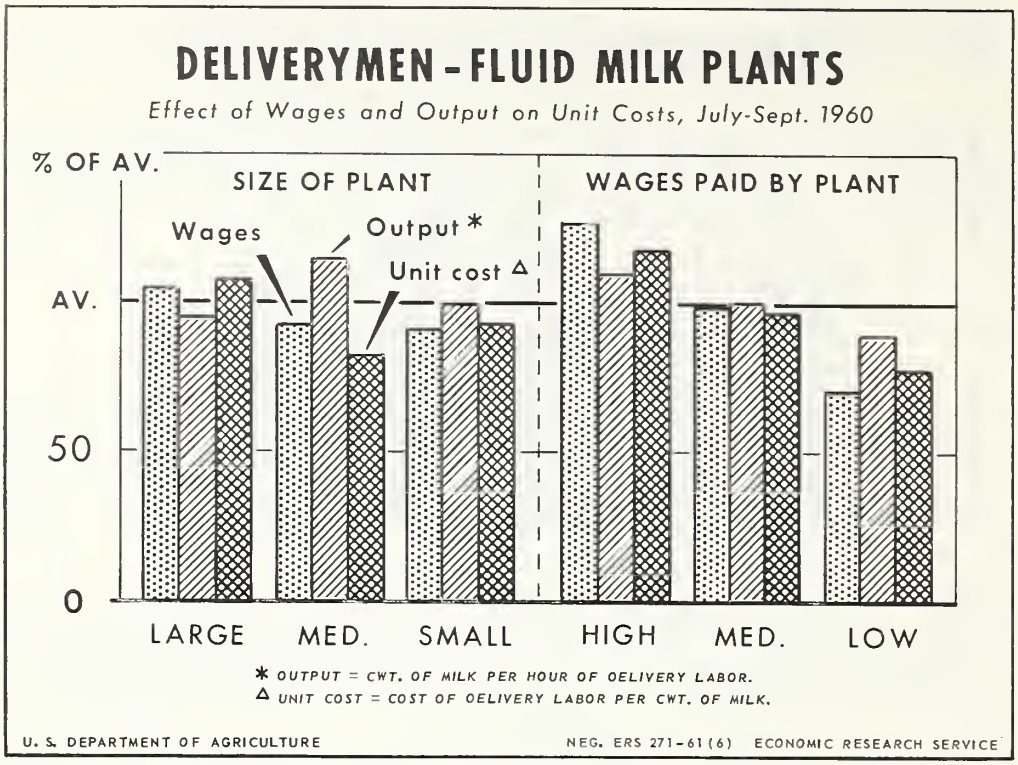

Figure 23

wages, 3 percent above average, but they also had the lowest output -- 5 percent below average. As a result, unit costs were 8 percent above average.

Wages in medium-sized plants were 4 percent below average, while output was 15 percent more than average. Consequently, unit costs were more than 17 percent below average. Since delivery costs are about 20 percent of total costs, apparently the medium-sized firms, as a group, have a real competitive advantage in distribution. Factors explaining this advantage have not been analyzed.

Small plants, as a group, paid the lowest wages -- 8 percent below average. Output was slightly less than average and unit costs were 7 percent below average.

Output of deliverymen increased as wages increased but not in direct proportion. Therefore, higher wages resulted in higher unit costs.

Plants with high wages (range -- $2.65 to $4.34 per hour) paid, as a group, 30 percent more than average. Output was 18 percent more than average, and unit costs were 10 percent above average.

Plants with medium wages (range -- $2.11 to $2.60 per hour) paid, as a group, about 1 percent below average. Output was slightly more than average, and unit costs were about 2 percent below.

Plants with low wages (range -- $0.94 to $2.04 per hour) paid 29 percent below average: The effect of this on unit costs was partially canceled out by output that was 11 percent less than average. Unit costs were 20 percent below average.

Office Workers

For office workers, size of plant was a factor in wages, output, and unit cost. Wages and output increased as size of plant increased; unit cost decreased as size increased (fig. 24). Ranges in wages also coincided with size: Large plants paid $1.36 to $2.61 per hour; medium-sized plants, $1.13 to $2.27; and small plants, $0.94 to $2.07.

Large plants, as a group, paid about average wages; output was 2 percent more than average; and unit costs were below average by the same amount. In medium-sized plants, wages were slightly above average; however, output was 4 percent less than average, resulting in unit costs 5 percent above average.

For small plants, wages were 8 percent below average; the effect of low earnings was more than canceled out by 16 percent below average output: Unit costs were 8 percent above average.

High wages were accompanied by high output but not in direct proportion. Plants with high wages (range -- $1.98 to $2.61 per hour) paid 16 percent above average. This was more than offset by output of 20 percent more than average; unit costs were 3 percent below average.

Plants with medium earnings (range -- $1.73 to $1.97 per hour) paid 2 percent above average wages but had 3 percent below average output; unit costs were above average. Plants with low earnings (range -- $0.94 to $1.65 per hour) paid 19 percent below average wages; output was almost as low, resulting in unit costs of almost average.

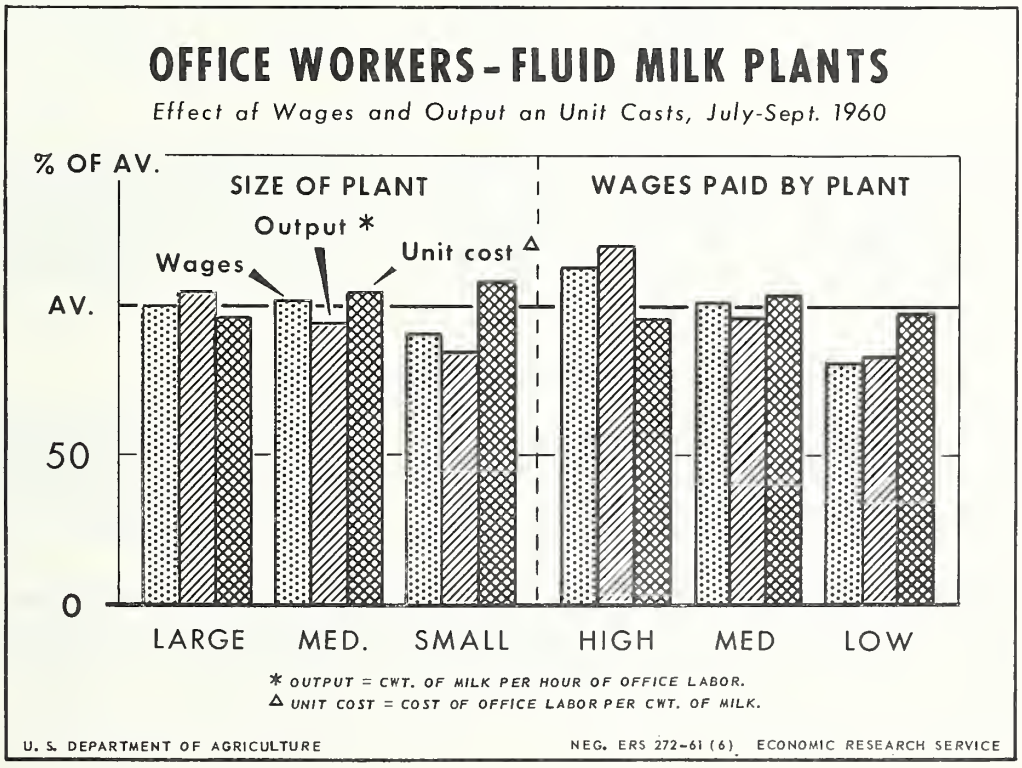

Figure 24

Processing Costs (MDSC-10, June 1959)

Processing costs for fluid milk distributors varied considerably during the 3 1/2-year period, July 1955-December 1958; the level was about the same at the end as at the beginning (table 16). Increasing prices paid for equipment and supplies and increasing rates paid for labor generally offset improved processing methods. During this period, costs increased 18 percent for glass bottles and 8 percent for paper cartons; wage rates for plant workers went up 23 percent.

General Processing

General processes, common to all products, were receiving and storing raw milk, separating, pasteurizing, and homogenizing. Costs of general processing averaged about a half cent per pound during the period; they were a little higher in 1957 but were a little lower in 1958. Costs were generally stable over this period but were consistently about 10 percent higher in the April-June quarter than in the October-December quarter. These seasonal variations were probably related to volumes processed and to product mix.

Glass Bottle Processing

Those processes directly associated with packaging fluid milk and cream into glass containers were handling, storing, and washing bottles and cases; filling, casing, and moving into the cold room. Distributors' costs for these processes averaged slightly less than 1 cent per pound, resulting primarily from the substantial increase in the cost of glass bottles. Seasonally, the costs were considerably higher in the spring and summer months.

Paper Carton Processing

Processes directly associated with packaging fluid milk and cream in paper containers were handling and storing carton stock and cases, filling casing, and moving into the cold room. These costs averaged a little less than 1.40 cents per pound. During the 3 1/2-year period studied there appeared to be no evidence of a trend or seasonal pattern.

Total Processing Costs

Total costs for processing fluid milk into glass containers averaged 1.46 cents per pound; they trended upward and showed a seasonal pattern. Total costs for processing fluid milk into paper cartons averaged 1.89 cents per pound; there appears to have been no trend or seasonal pattern during the 3 1/2-year period.

Some limited comparisons may be made between glass bottle and paper carton costs. For convenience, comparisons are made in terms of half-gallon equivalents (4.3 pounds of milk). In 1958, processing costs for half-gallons of milk were 6.34

Table 16.--Processing costs per pound for fluid milk distributors: General processing, glass container processing, and paper container processing 1/

Quarter	General processing 2/	Glass bottle processing 3/	Paper carton processing 4/	Total glass processing	Total paper processing
	Cents	Cents	Cents	Cents	Cents
1955					
July-September	0.51	0.94	1.35	1.45	1.86
October-December	.48	.93	1.41	1.41	1.89
1956					
January-March	.49	.86	1.39	1.35	1.88
April-June	.54	.95	1.40	1.49	1.94
July-September	.50	1.02	1.36	1.52	1.86
October-December	.48	.93	1.41	1.41	1.89
1957					
January-March	.52	.89	1.43	1.41	1.95
April-June	.53	.96	1.41	1.49	1.94
July-September	.54	.98	1.36	1.52	1.90
October-December	.51	.92	1.42	1.43	1.93
1958					
January-March	.50	.97	1.38	1.47	1.88
April-June	.52	1.00	1.37	1.52	1.89
July-September	.50	1.01	1.40	1.51	1.90
October-December	.45	.98	1.34	1.43	1.79
Weighted average for quarters (1956-58)					
January-March	0.50	0.90	1.40	1.40	1.90
April-June	.53	.97	1.39	1.50	1.92
July-September	.51	1.00	1.37	1.51	1.88
October-December	.48	.94	1.39	1.42	1.87

1/ Processing costs include labor, facilities and equipment, supplies, purchased services, taxes, and containers.

2/ Receiving, separating, standardizing, pasteurizing, and homogenizing.

3/ Handling, storing, and washing bottles and cases; filling bottles, casing, and moving to cold room.

4/ Handling and storing cartons and cases, filling cartons, casing, and moving to cold room.

cents in glass, and 8.02 cents in paper. Total processing and delivery cost of a half-gallon of milk in glass sold at retail (home delivery) was 18.84 cents in 1958. Comparable cost for a half-gallon in paper sold at wholesale was 13.67 cents.

Comparison of Processing Costs Among Firms

In October-December 1958, 61 of 80 firms surveyed processed milk into both glass bottles and paper cartons, 7 into glass only, and 12 into paper only. For general processing, costs per pound of product varied from 0.22 cent to 1.15 cents; for glass processing, from 0.37 cent to 2.71 cents; for paper processing, from 0.95 cent to 3.55 cents. The total processing costs ranged from 0.59 cent to 3.75 cents for glass containers and from 1.40 cents to 4.07 cents for paper.

Processing Costs (MDSC-11, Sept. 1959)

Both scale of operations and degree of specialization have considerable effect on processing costs. Size of firm has little effect on general processing costs (before milk is packaged) but has substantial effect on the costs of cartoning and bottling, which are considerably lower in the larger firms. Lower costs are also a mark of the specialized firms. Lowest costs occur in the larger specialized firm, and highest costs in the smaller generalized firm.

General Processing

During the period July 1955-December 1958 general processing costs -- receiving and storing raw milk, separating, pasteurizing, and homogenizing -- averaged a half cent per pound (table 17). These costs varied but little among different-sized firms, only from 0.49 cent per pound for large firms to 0.54 cent for small firms, or about $1.08 for each 1,000 quarts processed. Neither the average costs for all firms nor the average costs for the individual size groups showed any definite trend during the 3 1/2-year period.

Packaging Costs, by Size of Firm

Firms were divided into small, medium, and large categories on the bases of (1) the quantity of milk processed into paper cartons and (2) the quantity processed into glass bottles. Total costs for processing milk into paper cartons, by firms of all sizes, averaged 1.89 cents per pound during the July 1955-December 1958 period (table 18). In contrast to general processing costs, total paper carton costs varied considerably with the size of firms--costs for medium-sized firms were 18 percent higher than for large firms, and those for small firms were 28 percent higher.

As with paper carton processing costs, total glass bottle processing costs varied considerably with the size of the firm. For the 3 1/2-year period, the weighted

average cost was 1.45 cents per pound but the range was from 1.39 cents for large firms to 2.04 cents for the small firms. Costs for medium-sized firms were 11 percent higher than for large firms, and those for small firms were 47 percent higher.

Table 17.--General costs for processing milk: By size of firm 1/

(Cents per pound)

Period	Size category 2/			All firms reporting
	Large	Medium	Small	
1955	Cents	Cents	Cents	Cents
July-September	0.47	0.52	0.62	0.51
October-December	.44	.50	.52	.48
1956				
January-March	.48	.51	.52	.49
April-June	.53	.52	.57	.54
July-September	.46	.53	.58	.50
October-December	.51	.49	.49	.48
1957				
January-March	.52	.49	.52	.52
April-June	.53	.52	.55	.53
July-September	.55	.50	.55	.54
October-December	.50	.48	.50	.51
1958				
January-March	.47	.51	.48	.50
April-June	.50	.50	.61	.52
July-September	.46	.51	.55	.50
October-December	.43	.44	.50	.45
Weighted average	.49	.50	.54	.50

1/ Processing costs include labor for receiving and storing, separating, pasteurizing, and homogenizing milk; facilities and equipment; supplies, purchased services, and taxes.

2/ Size categories are based on the total amount of milk processed in the October-December 1958 quarter: Large, over 5.7 million pounds; medium, 2.5-5.7 million pounds; small, less than 2.5 million pounds.

Degree of Specialization

Distributors who specialize in processing milk into paper cartons have lower costs for this operation (table 19) than firms not specializing. Costs were lowest for the firms that had 100 percent paper operations -- 1.82 cents per pound. For lesser degrees of specialization, costs were: 80%-99% paper, 1 percent higher; 60%-79% paper, 4 percent higher; 40%-59% paper, 9 percent higher; 20-39% paper,

Table 18.--COSTS FOR PROCESSING MILK IN PAPER AND GLASS: By size of firm

(Cents per pound)

Type of packaging and period	Size category 1/			All firms reporting
	Large	Medium	Small	
Paper processing costs 2/	Cents	Cents	Cents	Cents
1955				
July-September	1.70	2.03	2.44	1.86
October-December	1.75	2.02	2.20	1.89
1956				
January-March	1.72	2.14	2.08	1.88
April-June	1.75	2.17	2.36	1.94
July-September	1.68	2.10	2.29	1.86
October-December	1.80	2.11	2.17	1.89
1957				
January-March	1.82	1.97	2.51	1.95
April-June	1.85	2.00	2.34	1.94
July-September	1.82	1.93	2.27	1.90
October-December	1.66	2.01	2.58	1.93
1958				
January-March	1.78	1.94	2.26	1.88
April-June	1.81	2.01	2.24	1.89
July-September	1.80	1.98	2.25	1.90
October-December	1.72	1.85	2.14	1.79
Weighted average	1.71	2.02	2.29	1.89
Glass processing costs 3/				
1955				
July-September	1.36	1.47	1.87	1.45
October-December	1.34	1.44	1.81	1.41
1956				
January-March	1.26	1.50	1.86	1.35
April-June	1.37	1.59	1.97	1.49
July-September	1.39	1.68	2.11	1.52
October-December	1.39	1.43	1.88	1.41
1957				
January-March	1.36	1.40	1.77	1.41
April-June	1.36	1.54	1.89	1.49
July-September	1.48	1.58	1.91	1.52
October-December	1.38	1.47	1.84	1.43
1958				
January-March	1.32	1.67	1.91	1.47
April-June	1.35	1.62	2.04	1.52
July-September	1.32	1.74	2.07	1.51
October-December	1.27	1.63	2.01	1.43
Weighted average	1.39	1.55	2.04	1.45

1/ Size categories in the October-December 1958 quarter: Pounds of milk processed in paper cartons; large, more than 3.3 million; medium, 1.6-3.3 million; small, less than 1.6 million. Pounds of milk processed in glass bottles; large, more than 2.4 million; medium, 0.9-2.4 million; small, less than 0.9 million. 2/ Costs of handling and storing cartons and cases, filling cartons, casing and moving to cold room, plus general processing costs. 3/ Costs of handling, storing, and washing bottles and cases, filling bottles, casing and moving to cold room, plus general processing costs.

Table 19.--COSTS FOR PROCESSING MILK IN PAPER AND GLASS: By degree of specialization

(Cents per pound)

Period	Paper processing costs 1/					
	Less than 20% paper	20%-39% paper	40%-59% paper	60%-79% paper	80%-99% paper	100% paper
1955	Cents	Cents	Cents	Cents	Cents	Cents
July-September	2.61	2.28	1.82	1.76	1.81	1.87
October-December	2.78	2.23	1.79	1.82	1.83	1.79
1956						
January-March	2.48	2.19	1.86	1.81	1.83	1.70
April-June	2.23	2 36	1.74	2.01	1.84	1.81
July-September	2.41	2.41	2.09	1.79	1.69	1.83
October-December	2.45	2.29	2.00	1.87	1.80	2.02
1957						
January-March	3.34	2.23	2.07	1.91	1.78	1.80
April-June	2.69	2.35	2.13	1.88	1.84	1.93
July-September	2.51	2.21	2.15	1.83	1.72	1.66
October-December	2.54	2.13	2.12	1.99	1.71	1.77
1958						
January-March	2.62	2.10	2.08	1.93	1.79	1.71
April-June	2.22	2.12	2.16	1.92	2.04	1.75
July-September	2.47	2.12	2.06	1.96	1.79	1.93
October-December	2.46	1.98	1.89	1.87	1.67	1.63
Weighted average	2.66	2.22	1.99	1.89	1.84	1.82
	Glass processing costs 2/					
	Less than 20% glass	20%-39% glass	40%-59% glass	60%-79% glass	80%-99% glass	100% glass
1955	Cents	Cents	Cents	Cents	Cents	Cents
July-September	1.57	1.43	1.41	1 54	1.45	1.48
October-December	1.50	1.50	1.36	1.49	1.49	1.55
1956						
January-March	1.50	1.48	1.40	1.35	1.51	1.51
April-June	1.42	1.77	1.39	1.45	1.39	1.62
July-September	1.89	1.49	1.57	1.57	1.41	1.70
October-December	1.62	1.66	1.54	1.54	1.50	1.49
1957						
January-March	1.58	1.58	1.44	1.28	1.39	1.60
April-June	1.94	1.57	1.54	1.44	1.42	1.49
July-September	1.98	1.63	1.59	1.44	1.43	1.82
October-December	1.95	1.61	1.52	1.34	1.37	1.64
1958						
January-March	2.69	1.59	1.48	1.27	1.37	1.56
April-June	3.20	1.67	1.50	1.36	1.37	1.57
July-September	2.46	1.68	1.52	1.41	1.31	1.36
October-December	2.19	1.77	1 37	1.28	1.51	1.18
Weighted average	1.98	1.61	1.52	1.41	1.44	1.53

1/ Costs of handling and storing cartons and cases, filling cartons, casing and moving to cold room, plus general processing costs.

2/ Costs of handling, storing, and washing bottles and cases, filling bottles, casing and moving to cold room, plus general processing costs.

22 percent higher; less than 20% paper, 46 percent higher. The relatively high cost for the last category is partly explained by the fact that this group was made up primarily of smaller firms. However, this does not detract from the importance of specialization: The largest average amount of milk processed in paper occurred in the firms falling in the 60%-79% paper category.

Evidence of the effect of specialization on cost is not so clear for glass bottle processing as it is for paper carton processing. In glass bottle processing the lowest costs occurred in the firms that had 60%-79% of their volume in glass; the firms that were more specialized -- 80%-99% or 100% of their milk in glass -- had higher costs, probably because they had smaller than average total volume. However, the effects of specialization are evident as the proportion in glass decreases.

The effects of specialization can be shown by direct comparison (table 20).

Table 20.--Costs for processing milk in paper and glass: By degree of specialization, average, July 1955-December 1958

(Cents per pound)

Type of container	Specialization category						
	100% glass	Less than 20% paper: 80%-99% glass	20%-39% paper: 60%-79% glass	40%-59% paper: 40%-59% glass	60%-79% paper: 20%-39% glass	80%-99% paper: Less than 20% glass	100% paper
	Cents	Cents	Cents	Cents	Cents	Cents	Cents
Paper		2.66	2.22	1.99	1.89	1.84	1.82
Glass	1.53	1.44	1.41	1.52	1.61	1.98	

Delivery and Sales Cost (MDSC-8, Dec. 1958)

Efficiency of delivery operations for fluid milk distributors improved but little, if any, during the 3-year period July 1955 through June 1958. Consequently, the increasing prices paid for equipment and supplies and the increasing rates paid for labor resulted in increasing costs for delivery (table 20).

No Improvement in Efficiency--Costs Up 15 Percent for Retail

Route density (number of customers per mile) for retail deliveries varied from 4.58 to 5.07 during the 3-year period. The data do not indicate either a trend or a pattern of seasonal variation. Retail route efficiency, measured in terms of amount of product per customer stop, has not increased; comparisons of the same quarter for different years show that slight increases in the second and third quarters were

fully offset by the decreases in the first and fourth quarters. While variations between the high of 6.32 pounds and the low of 5.81 pounds per customer stop were irregular, there was a definite seasonal pattern: Deliveries in the July-September quarters were consistently smaller than those in the October-December quarters.

Retail delivery costs increased steadily during the 3-year period, except for part of 1956. Costs ranged from 14.7 cents to 17.5 cents per customer stop and from 2.50 cents to 2.91 cents per pound of product delivered -- up nearly one-fifth during the 3-year period.

Slight Improvement in Efficiency -- Costs Up 8 Percent for Wholesale

For wholesale delivery, route density varied between a low of 0.710 and a high of 0.801 during 1955-58 (table 21). No trend or pattern of seasonal variation was evident. The amount of product delivered per customer stop varied between 58.37 pounds and 68.31 pounds. The amount of product delivered per customer stop increased during the last 6 quarters for the 3-year period as compared with the first 6 quarters. A comparison of the first quarters of 1957 and 1958 and the fourth quarters of 1955 and 1957 indicates that the improvement was not consistent. There was definite seasonal pattern in the amount delivered per stop.

Wholesale delivery costs increased about 8 percent during the 3-year period (table 21). The delivery costs increased about 13 percent from the last 2 quarters of 1955 to the same period of 1957 but decreased thereafter. Costs per customer stop ranged from 73.4 cents to 87.8 cents, and per pound of product delivered, from 1.22 cents to 1.43 cents. No definite seasonal pattern was evident.

Some interesting comparisons of wholesale delivery and retail delivery can be made. For convenience, comparisons are made in terms of quart equivalent.

During the first 2 quarters of 1958, deliveries per customer stop averaged about 2.8 quarts on retail routes and 31.3 quarts on wholesale routes. Since most deliveries were 3 times a week for retail customers and 6 times a week for wholesale customers, average weekly sales per customer were about 11.4 quarts-equivalent for retail and 189 quarts-equivalent for wholesale.

Comparable delivery costs for retail in 1958 were more than double those for wholesale. For half-gallons, the container size used for over 40 percent of all sales, retail delivery costs were 12.50 cents and wholesale delivery costs were 5.65 cents. The difference has been increasing. In the last 2 quarters of 1955, wholesale delivery costs were 5.50 cents less than retail; in the first 2 quarters of 1958 the difference was 6.86 cents.

Table 21.--MEASURES OF EFFICIENCY OF DELIVERY OPERATIONS FOR FLUID MILK DISTRIBUTORS: Customers per mile, pounds of product per delivery, costs per customer stop, and costs per pound of product 1/

Period	Average customers per mile	Average pounds of product per stop	Average costs per customer stop	Average costs per pound of product delivered
	Number	Pounds	Cents	Cents
		RETAIL 2/		
1955				
July-Sept..	5.07	5.85	14.7	2.50
Oct.-Dec...	4.77	6.32	16.0	2.52
1956				
Jan.-Mar...	4.58	6.16	15.6	2.54
Apr.-June..	4.90	5.92	15.3	2.65
July-Sept..	4.96	5.81	15.2	2.42
Oct.-Dec...	4.70	6.23	15.7	2.58
1957				
Jan.-Mar...	4.72	6.11	16.0	2.68
Apr.-June..	4.88	6.02	16.0	2.73
July-Sept..	4.83	6.00	16.6	2.83
Oct.-Dec...	5.00	6.19	16.6	2.76
1958				
Jan.-Mar...	4.73	5.93	16.7	2.87
Apr.-June..	4.78	6.07	17.5	2.91
		WHOLESALE		
1955				
July-Sept..	0.794	61.14	73.4	1.22
Oct.-Dec...	.731	66.05	79.7	1.24
1956				
Jan.-Mar...	.755	62.57	76.4	1.22
Apr.-June..	.720	58.37	74.7	1.38
July-Sept..	.764	58.61	76.1	1.37
Oct.-Dec...	.801	63.86	81.8	1.32
1957				
Jan.-Mar...	.710	68.02	87.8	1.31
Apr.-June..	.763	63.48	87.2	1.43
July-Sept..	.739	66.15	86.0	1.36
Oct.-Dec...	.775	65.82	87.3	1.36
1958				
Jan.-Mar...	.774	66.01	82.7	1.32
Apr.-June..	.771	68.31	82.9	1.30

1/ Delivery costs include (a) wages, salaries, and commissions for platform labor, truck drivers and salesmen; (b) route supplies; (c) rent, repairs, and depreciation for garages; (d) purchased services such as uniforms and utilities associated with delivery functions; (e) advertising and business relations; (f) bad debt losses; and (g) all delivery truck costs such as maintenance, gasoline, tires and tubes, oil and grease, repairs, licenses, insurance, and depreciation.

2/ Home delivery.

Delivery and Sales Costs (MDSC-9, March 1959)

Efficiency of delivery operations for fluid milk distributors is related to the degree of specialization and to size.

Retail Costs

By specialization.--Distributors who specialize in retail (home delivery) sales are considerably more efficient in retail delivery operations than other distributors. They have the greatest route density (customers per mile) and about average amount of product delivered per customer; consequently, the amount of product per route mile is largest for these firms. Of greater importance is the fact that the delivery and selling cost per pound of product is substantially lower for the distributor who specializes -- costs per pound of product were some 10 percent lower than the average for all firms, and 20 percent lower than the highest cost group (table 22).

Those distributors who specialized in wholesale operations were, generally, the least efficient in retail operations.

In retail operations, the degree of specialization appears to be of considerable importance. The predominantly retail distributors (80 percent or more of total sales at retail) were the most efficient. On the other hand, the basically retail distributors (60 to 79 percent of total sales at retail) are no more efficient than the mixed distributors (those with about equal retail and wholesale sales). Also, the least efficient are the basically wholesale distributors (20 to 39 percent of total sales at retail) rather than the predominantly wholesale (19 percent or less of total sales at retail).

By volume.--There was little, if any, difference in the retail delivery efficiency of large retail volume and medium retail volume distributors. As between the two, medium volume firms delivered slightly more product per customer stop, but they had slightly lower route density. Costs per customer stop and per pound of product were about the same (table 23).

Small retail volume distributors had more customers per mile than the average and about average deliveries per customer. In spite of this, delivery and selling costs per customer and per pound of product were higher than for either large or medium volume distributors.

Wholesale Costs

By specialization.--In wholesale operations--more than in retail operations--specialization appears to be closely tied to efficiency. The predominantly wholesale distributors (those in which wholesale operations account for 80 percent or more of all sales) sell the most product per customer stop and have the lowest delivery

Table 22--MEASURES OF EFFICIENCY OF RETAIL DELIVERY OPERATIONS OF FLUID MILK DISTRIBUTORS: By degree of specialization in retail sales 1/

Period	Predominantly retail (80 percent or more retail)	Basically retail (60 percent to 79 percent retail)	Mixed (40 percent to 59 percent retail)	Basically wholesale (20 percent to 39 percent retail)	Predominantly wholesale (19 percent or less retail)
	CUSTOMERS PER MILE				
	Number	Number	Number	Number	Number
1955					
July-December	6.4	5.0	5.3	4.4	3.7
1956					
January-June	6.9	5.0	4.8	4.7	3.6
July-December	5.5	5.3	4.9	4.3	3.5
1957					
January-June	5.6	5.1	4.6	4.5	4.0
July-December	6.4	4.8	4.8	4.5	4.2
1958					
January-June	6.9	5.0	4.7	3.8	3.7
	COSTS PER CUSTOMER STOP				
	Cents	Cents	Cents	Cents	Cents
1955					
July-December	14.1	14.9	15.5	15.7	14.1
1956					
January-June	14.7	14.6	15.7	16.2	14.5
July-December	14.3	14.7	15.9	17.1	15.8
1957					
January-June	14.3	15.8	16.6	17.2	18.5
July-December	14.1	16.6	17.5	17.5	19.5
1958					
January-June	14.4	16.6	17.3	19.1	18.3
	POUNDS OF PRODUCT PER CUSTOMER STOP				
	Pounds	Pounds	Pounds	Pounds	Pounds
1955					
July-December	6.1	6.0	6.2	5.9	6.0
1956					
January-June	6.2	5.9	6.2	5.8	6.1
July-December	6.2	5.9	6.1	5.8	6.3
1957					
January-June	6.2	5.7	6.3	5.8	6.9
July-December	6.1	5.8	6.2	5.9	7.2
1958					
January-June	5.9	5.8	6.0	6.1	6.8
	COSTS PER POUND OF PRODUCT				
	Cents	Cents	Cents	Cents	Cents
1955					
July-December	2.3	2.5	2.5	2.7	2.3
1956					
January-June	2.3	2.5	2.5	2.8	2.4
July-December	2.3	2.5	2.6	2.9	2.5
1957					
January-June	2.3	2.8	2.7	3.0	2.7
July-December	2.3	2.9	2.8	3.0	2.7
1958					
January-June	2.4	2.9	2.9	3.1	2.7

1/ Home delivery.

Table 23.--MEASURES OF EFFICIENCY OF RETAIL DELIVERY OPERATIONS OF FLUID MILK DISTRIBUTORS: By size of firm

Period	Large	Medium	Small
	CUSTOMERS PER MILE		
1955	Number	Number	Number
July-December	4.1	4.8	5.2
1956			
January-June	4.0	4.5	5.1
July-December	4.3	4.7	5.0
1957			
January-June	4.5	4.8	4.8
July-December	4.8	5.1	4.9
1958			
January-June	4.7	4.8	4.9
	COSTS PER CUSTOMER STOP		
1955	Cents	Cents	Cents
July-December	14.2	14.2	16.0
1956			
January-June	14.8	14.9	16.1
July-December	14.9	15.4	17.1
1957			
January-June	15.6	15.3	17.4
July-December	16.2	15.2	17.9
1958			
January-June	16.0	15.8	18.2
	POUNDS OF PRODUCT PER CUSTOMER STOP		
1955	Pounds	Pounds	Pounds
July-December	6.1	6.1	6.1
1956			
January-June	6.2	6.1	6.0
July-December	6.0	6.1	6.1
1957			
January-June	6.3	6.1	5.9
July-December	6.2	6.0	6.1
1958			
January-June	6.2	6.1	6.0
	COSTS PER POUND OF PRODUCT		
1955	Cents	Cents	Cents
July-December	2.3	2.3	2.6
1956			
January-June	2.4	2.4	2.7
July-December	2.5	2.5	2.8
1957			
January-June	2.5	2.5	2.9
July-December	2.7	2.5	3.0
1958			
January-June	2.6	2.6	3.1

and selling costs per pound of product. Route density is of less importance to the wholesale operations than to retail operations. The predominantly wholesale firms had the fewest customers per mile on wholesale routes (table 24).

At each level of wholesale specialization, except those firms with 19 percent or less of total sales at wholesale, distributors' costs per pound of product increased. Amount of product per customer drops sharply from the predominantly wholesale to the basically wholesale distributor and from the mixed distributor to the basically retail distributor. There is no clear difference between the basically wholesale and the mixed firms in amount of product per customer (table 25).

By volume.--Volume of wholesale sales, measured by costs per pound of product, does not appear to be an important factor in efficiency of wholesale delivery operations. These costs are about the same for large, medium, and small volume distributors. Costs per customer are lowest for large volume distributors and highest for small volume distributors, but this, apparently, is only because of the amounts of product delivered per customer stop.

Observations on Delivery Operations

First, specialization is not related to volume of sales. Small volume distributors range from over 90 percent wholesale to over 90 percent retail; the same is true of medium and large volume firms.

Second, in both retail and wholesale operations the least specialized distributors have costs that appear to be contrary to the general trend; that is, lower than some of the more specialized firms. This may be due to cost allocation procedures: In the specialized retail firm, a larger proportion of wholesale sales tends to be made on retail routes. In such instances, even though the sale is properly recorded, part of the cost properly chargeable to wholesale may be hidden in the retail cost accounts. The reverse may be true for retail sales by the specialized wholesale distributor.

Table 24.--MEASURES OF EFFICIENCY OF WHOLESALE DELIVERY OPERATIONS OF FLUID MILK DISTRIBUTORS: By degree of specialization in wholesale sales

Period	Predominantly retail (19 percent or less wholesale)	Basically retail (20 percent to 39 percent wholesale)	Mixed (40 percent to 59 percent wholesale)	Basically wholesale (60 percent to 79 percent wholesale)	Predominantly wholesale (80 percent or more wholesale)
	CUSTOMERS PER MILE				
	Number	Number	Number	Number	Number
1955					
July-December	0.72	1.09	0.79	0.82	0.51
1956					
January-June	.74	1.01	.82	.81	.50
July-December	.71	.93	.81	.82	.55
1957					
January-June	.75	.92	.82	.79	.48
July-December	.96	.78	.83	.76	.51
1958					
January-June	1.01	.76	.83	.82	.59
	COSTS PER CUSTOMER STOP				
	Cents	Cents	Cents	Cents	Cents
1955					
July-December	0.63	0.67	0.88	0.72	0.76
1956					
January-June	.70	.77	.86	.67	.73
July-December	.72	.74	.94	.76	.76
1957					
January-June	.72	.88	.93	.82	.82
July-December	.76	.88	.90	.85	.86
1958					
January-June	.71	.98	.95	.77	.86
	POUNDS OF PRODUCT PER CUSTOMER STOP				
	Pounds	Pounds	Pounds	Pounds	Pounds
1955					
July-December	48	41	67	60	72
1956					
January-June	53	47	64	54	68
July-December	54	48	61	59	68
1957					
January-June	54	57	60	63	71
July-December	57	57	60	67	70
1958					
January-June	54	59	64	61	72
	COSTS PER POUND OF PRODUCT				
	Cents	Cents	Cents	Cents	Cents
1955					
July-December	1.3	1.6	1.3	1.2	1.1
1956					
January-June	1.3	1.6	1.4	1.2	1.1
July-December	1.3	1.5	1.6	1.3	1.1
1957					
January-June	1.3	1.5	1.5	1.3	1.2
July-December	1.4	1.6	1.5	1.3	1.2
1958					
January-June	1.3	1.7	1.5	1.3	1.2

Table 25.--MEASURES OF EFFICIENCY OF WHOLESALE DELIVERY OPERATIONS OF FLUID MILK DISTRIBUTORS: By size of firm

Period	Large	Medium	Small
	CUSTOMERS PER MILE		
1955	Number	Number	Number
July-December	0.95	0.73	0.77
1956			
January-June	.88	.73	.73
July-December	.91	.74	.76
1957			
January-June	.65	.69	.79
July-December	.74	.71	.78
1958			
January-June	.70	.72	.81
	COSTS PER CUSTOMER STOP		
1955	Cents	Cents	Cents
July-December	56	70	76
1956			
January-June	59	72	86
July-December	65	79	91
1957			
January-June	68	84	93
July-December	66	85	93
1958			
January-June	64	89	96
	POUNDS OF PRODUCT PER CUSTOMER STOP		
1955	Pounds	Pounds	Pounds
July-December	43	56	63
1956			
January-June	45	54	68
July-December	48	59	70
1957			
January-June	50	63	71
July-December	49	66	71
1958			
January-June	46	65	71
	COSTS PER POUND OF PRODUCT		
1955	Cents	Cents	Cents
July-December	1.3	1.2	1.2
1956			
January-June	1.3	1.3	1.3
July-December	1.4	1.3	1.3
1957			
January-June	1.4	1.3	1.3
July-December	1.3	1.4	1.3
1958			
January-June	1.4	1.4	1.3

SECTION V - PROFITS

Individual Distributor's Net Profit, Before Income Taxes, Shows Wide Variations (MDSC-5, March 1958)

While the average net profit, before income taxes, of a large group of firms shows substantial seasonal and trend variations, such averages reveal little of the operation of the individual firm. For the year 1957, average net return for all firms was $0.38 per hundredweight of milk and cream purchased (table 1) but for individual firms net return varied from a profit of $1.38 to a loss of $0.77, a range of $2.15 (table 26). Large firms had the widest range ($2.15) and medium-sized firms had the narrowest range ($1.54).

For individual firms, whatever the level of net profit may be for a given quarter, it can be expected, on the average, either to increase or decrease $0.39 in the next quarter. This was determined by a study of quarter-to-quarter variations in net

Table 26.--Distribution of net profits, before income taxes, per hundred pounds of milk and cream processed for 1957

Amount of net profit per hundred pounds	All firms	Large firms	Medium firms	Small firms
Dollars	Percent	Percent	Percent	Percent
1.20 and over	5	4	5	6
1.00 to 1.19	2	4	---	---
.80 to .99	7	5	5	12
.60 to .79	17	14	21	18
.40 to .59	22	23	32	13
.20 to .39	22	36	16	12
.00 to .19	12	4	16	17
-.01 to -.19	5	5	---	11
-.20 to -.39	4	---	5	6
-.40 and less	4	5	---	5
Range in net profits				
	Dollars	Dollars	Dollars	Dollars
Largest	1.38	1.38	1.29	1.33
Smallest	- .77	- .77	- .25	- .44

profits for 24 quarters, January-March 1952 through October-December 1957 (table 27). Changes in profits from quarter to quarter ranged, in the extreme cases, from an increase of $2.35 to a decrease of $2.30.

None of the firms was able to maintain net profits on an even basis. Profits for three firms have been charted (fig. 25). These firms are typical of their size groups for variation in profits but are not necessarily typical for level of profits.

Determination of the causes of variation in net profits will require considerably more study. Some will be additive, others will be offsetting. Without detailed analysis it may be assumed that among the causes may be the volume of milk processed, variation of the product line, the relatively fixed nature of most operating costs, and the fact that prices paid for raw milk and cream change more often than do prices received for products sold. For instance, for the individual firms, prices paid may change four times a year, or, in some cases, every month. Sales experience may indicate that it is unwise to change prices for products more often than twice a year. In addition, for the individual firm, other causes of variation in net profits may include labor disputes, milk strikes, price wars, and adverse weather conditions.

There are no statistically significant differences in the net profit among the large, medium, and small firms. Analysis of variance among the size groups shows that the probabilities are more than 3 to 1 that the variations were due to chance

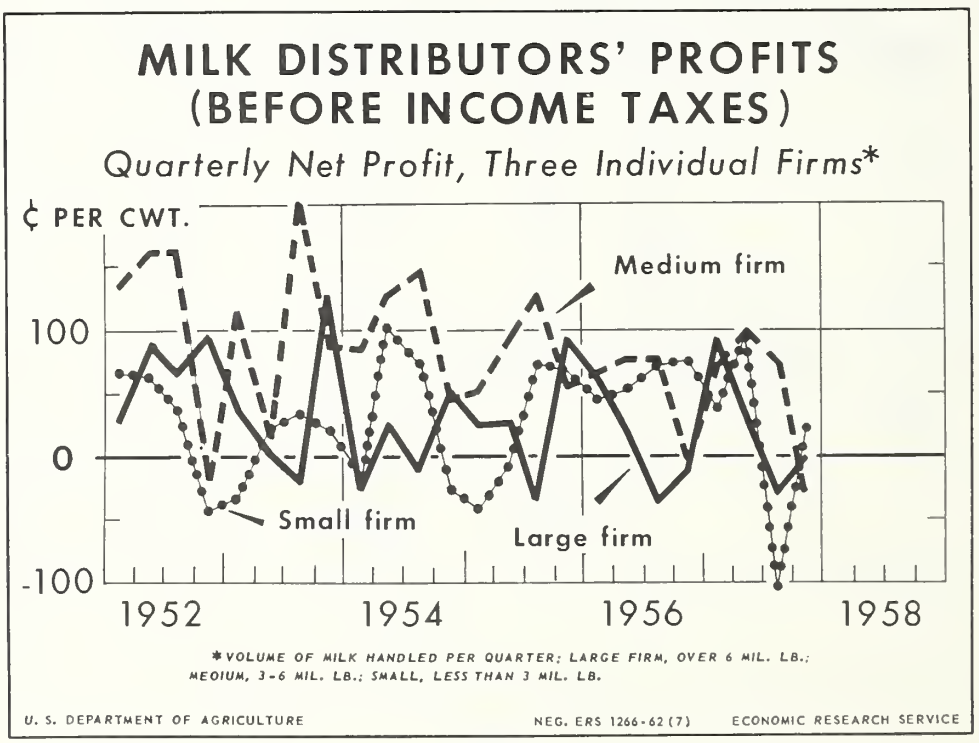

Figure 25

Table 27.--CHANGES IN NET PROFITS OF DAIRY FIRMS: quarter to quarter changes (before income taxes) for selected firms, 24 quarters, 1952-57

Amount of change in net margin per hundred pounds of milk and cream processed	All firms	Large firms 1/	Medium firms 1/	Small firms 1/
Dollars	Percent	Percent	Percent	Percent
1.00 and over	3.4	3.1	2.5	4.6
.80 to .99	2.1	1.3	1.8	3.1
.60 to .79	4.9	3.9	5.9	5.1
.40 to .59	8.9	8.1	9.0	9.6
.20 to .39	12.0	11.0	13.8	11.3
.00 to .19	19.5	23.7	19.2	15.2
-.01 to -.19	16.2	19.8	14.2	14.5
-.20 to -.39	13.3	11.9	12.9	15.4
-.40 to -.59	8.5	7.3	9.5	8.7
-.60 to -.79	4.9	5.5	4.3	5.1
-.80 to -.99	2.4	2.2	2.2	2.6
-1.00 and less	3.9	2.2	4.7	4.8
Percentage of quarters				
With increases	50.8	51.1	52.2	48.9
With decreases	49.2	48.9	47.8	51.1
	Amount of change in net margin per hundredweight			
	Dollars	Dollars	Dollars	Dollars
Average change	0.39	0.34	0.40	0.44
Range in individual quarterly changes:				
Greatest increase	2.35	1.87	2.35	1.66
Greatest decrease	2.30	2.07	2.02	2.30

1/ Size of firms: In millions of pounds of milk handled per quarter. Large--6.0 and over; medium--3.0 to 6; small--less than 3.

Table 28.--CHANGES IN NET PROFIT OF DAIRY FIRMS: changes by quarters (before income taxes) for selected firms, 24 quarters, 1952-57

Amount of change in net margin per hundred pounds of milk and cream processed	All quarters	First quarters	Second quarters	Third quarters	Fourth quarters
Dollars	Percent	Percent	Percent	Percent	Percent
1.00 and over	3.4	2.2	3.4	3.8	3.7
.80 to .99	2.1	4.5	1.1	1.7	1.4
.60 to .79	4.9	7.4	6.0	2.3	4.6
.40 to .59	8.9	10.8	7.4	7.2	10.6
.20 to .39	12.0	13.4	10.9	10.2	14.0
.00 to .19	19.5	23.4	17.7	18.6	19.1
-.01 to -.19	16.2	17.1	16.9	16.9	14.3
-.20 to -.39	13.3	10.8	14.0	15.4	12.6
-.40 to -.59	8.5	4.0	9.2	13.7	6.0
-.60 to -.79	4.9	2.6	6.0	6.1	4.6
-.80 to -.99	2.4	1.9	3.1	1.2	3.1
-1.00 and less	3.9	1.9	4.3	2.9	6.0
Percentage of quarters					
With increases	50.8	61.7	46.5	43.8	53.4
With decreases	49.2	38.3	53.5	56.2	46.6
	Average of differences from previous quarter				
	Cents	Cents	Cents	Cents	Cents
Large	-0.5	+8.1	-8.6	-3.2	+3.3
Medium	-2.0	+11.5	-3.1	-9.0	-4.3
Small	-1.3	+11.3	-4.0	-4.8	-4.7
All firms	-1.3	+10.3	-5.3	-5.7	-1.8

alone. However, there are some indications that larger firms may be slightly more stable than smaller firms. The average change in net profits for large firms was an increase or decrease of $0.34; for medium-sized firms, $0.40; and for small firms, $0.44. Medium-sized firms had a wider range in net profits than did either the large or small firms. Frequency of changes occurring within certain limits may also be some indication of relative stability: For all firms 61.5 percent of the changes fall within a range of a plus 39 to a minus 39. Comparable data by size categories are: Large--66.4 percent; medium--60.1 percent; small--56.4 percent.

There are statistically significant differences in the changes in net profit among the four quarters of the year. Analysis of variance among the quarters shows that the probabilities are about 200 to 1 that the variations were not due to chance alone (table 28). In the first quarter of the year 61.7 percent of all changes from the previous quarter were increases. For the other quarters the increases were: Second quarter--46.5 percent; third quarter--46.5 percent; and fourth quarter--53.4 percent. These data are consistent with the weighted average net profits which show that profits are higher in the first half of the year than in the second half.

Average differences from the previous quarter tend to indicate slightly more stability in large firms. Medium-sized firms show the least stability (table 28). The average difference of a minus 1.3 cents for all firms for all quarters would be expected since average profits have been decreasing.

The data presented here apply only to variations in net profits on a quarter-to-quarter basis. They do not measure the amount of net profits and are not necessarily an indication of the rate of net profit of various sizes of firms.

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